DOCUMENT RESUME

ED 159 366	CE 017 088

AUTHOR	Meaders, O. Donald; Chi-ho, Hu
TITLE	An Evaluation of Taiwan Vocational and Technical Education Programs in Agriculture.
INSTITUTION	Michigan State Univ., East Lansing. Dept. of Secondary Education and Curriculum.
PUB DATE	Oct 77
NOTE	169p.
EDRS PRICE	MF-$0.83 HC-$8.69 Plus Postage.
DESCRIPTORS	*Agricultural Education; *Educational Assessment; Educational Objectives; *Educational Programs; Foreign Countries; Graduate Surveys; National Programs; Postsecondary Education; Program Administration; *Program Evaluation; Rural Development; *School Surveys; Secondary Education; *Vocational Agriculture
IDENTIFIERS	*Taiwan

ABSTRACT

Presented in both English and Chinese, this study of the system of agricultural education in Taiwan secondary and postsecondary schools resulted from the author's five-month stay in Taiwan and subsequent visits. Focus of the study is on evaluation of Taiwan's vocational agriculture education programs with information about students, faculties, facilities and equipment, and graduates. The evaluation involved identifying agricultural goals, determining objectives for the educational programs, and judging program strengths and weaknesses in terms of these goals and objectives. Recommendations for changes in educational programs and in program administration are also made. Appendixes include data collected from surveys of schools and graduates of Taiwan vocational and technical curricula and maps showing agricultural population, programs, and planned specialized production areas. (JF)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED159366

AN EVALUATION OF TAIWAN VOCATIONAL AND TECHNICAL EDUCATION PROGRAMS IN AGRICULTURE

臺灣農業職業及技術教育之評估

NCHU
MSU

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

O. Donald Meaders

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

CE 017 088

國立中興大學農學院農業教育學系

Department of Secondary Education and Curriculum
Michigan State University

October 1977

A Report on a Study to Evaluate the Vocational and Technical Education Programs in Taiwan

by
O. Donald Meaders, Professor
Department of Secondary Education and Curriculum
Michigan State University

胡　啓　和
國立中興大學農業教育學系教授兼系主任

Project Consultant:
R. Paul Marvin, Professor and Head
Department of Agricultural Education
University of Minnesota

Project Director　O. Donald Meaders
計畫同執行人　胡　啓　和

FOREWORD

The rapidly expanding world population provides a serious challenge to agricultural educators and others who are concerned about an adequate supply of food. The expanding population in countries which already have inadequate food supplies multiplies the challenge in those countries to increase the food production and distribution. In addition, the problem is further complicated by the widening gap between the level of living for people in urban areas and those in rural areas of the less developed countries.

A frequently asked question is: What can be done to prepare young people to be both *willing* and *able* to work with farmers, with rural youth, in the remote rural areas of the developing countries? Often that question is followed by suggestions and discussion about alternative forms of formal and non-formal education, about alternative levels of schooling, and about possible examples of countries in which particular forms and levels of education have been tried.

Taiwan was chosen for this particular study because of several reasons. The agricultural developments since 1950 have been outstanding in Taiwan while much industrialization has taken place. There has evolved a system of agricultural education which includes three levels of schooling, an extensive network of farmer associations with extension workers and an agricultural research/demonstration program that encompasses the entire island. In addition, the author has conducted research projects there in previous years which have provided a base of data and knowledge about the agricultural education situation.

It is hoped that through this report the reader may gain some insights about vocational education in agriculture in senior middle schools and the technical education in agriculture through two- and three-year junior collegs (or technical institutes). These two levels of schools have provided thousands of young persons with some training in agriculture during the past twenty-five years. This report provides information about the present students, the faculty, the facilities and equipment and the graduates. In addition, the present Government programs for agricultural development have been viewed as a major factor for consideration when planning for the future of these two levels of schools.

Much cooperation was received from many groups and individuals to make this study possible. The cooperation from the principals of the thirtyseven schools and the presidents of the two junior colleges made many resources available to the researchers. The officials in the various ministries of the National Government and in the departments of the Provincial Government made available all data which were requested and gave many hours of time for discussions with the researchers.

The Electronic Data Processing Department, Taiwan Sugar Corporation provided excellent services for the processing of data from the questionnaires and for the preparation of many tables of data.

Officials in The Joint Commission on Rural Reconstruction (JCRR) provided in-depth orientation sessions regarding the present situation in agriculture and the policies and priorities of agricultural development during the next 5-7 years. (As an aside, the readers who are not familiar with the JCRR and its special role in the agricultural development of Taiwan are urged to seek out the several published reports which describe the JCRR.)

The cooperation which began in the late 1950's between Michigan State University and the then Provincial College of Agriculture was continued through the office of Lo Yo-ping, President, National Chung Hsing University, the College of Agriculture, and the Department of Agricultural Education.

The policy for sabbatical leave at Michigan State University and a grant from the Midwest Consortium for International Activities, Inc. provided the means for the author to spend five months in Taiwan during 1975 and for brief follow-up visits during February and September-October 1976.

During the delay of about 30 months between the collection of data and the publication of this report sevral changes were made in both the vocational and technical agriculture programs. Therefore, some of the details in this report no longer reflect the existing condition but should be valuable for future references. And the government officials are to be commended for their prompt actions to strengthen the educational programs.

The responsibility for the preparation of this report in its bilingual form, similar to the form for a research report in 1968, has again been shared with Professor Hu Chi-ho for the Chinese version. However, I accept full responsibility for the English version.

O. Donald Meaders
October, 1977

序　言

世界人口之迅速膨脹，對關心糧食適當供應之農業教育者及其他人士爲一嚴重之挑戰。對某些人口遽增且又有糧食供應不足之國家，復存在有糧食之增產及分配問題，更有進者，由於開發中國家城市及鄉區居民，生活水準差距日大，益使問題趨於複雜。

經常提出之問題爲：在開發國家中，如何方能使青年志願並能夠在偏僻之鄉區中與農民及農村青年共同工作？其答案常爲對正規的及非正規的教育，不同階段之學校教育之建議與討論，以及某些國家對此等問題處理之事例等。

臺灣作爲此一問題之研究對象有若干理由。自民國三十九年以降，臺灣之農業及工業均有長足之發展，在農業教育方面有一三個階層之教育制度，並有遍及全省之農業推廣體系及農事研究單位。此外，筆者過去在臺從事多次研究工作，對臺灣農業教育有深切之體認並保有有關之基本資料。

深願能由此研究報告提供讀者對農業職業及農業專科教育有較深入之瞭解。此兩階層之農業教育，在過去二十餘年來曾對千百青年從事農業之訓練。本報告並提供學校之一般情況，並將政府農業發展計畫視爲對訂定農業職業及技術教育未來之主要因素。

本研究計畫能付諸實施，實賴多方面之團體與個人之支援與合作。兩所專科學校校長及三十七所高中校長提供研究資料，中央及省級有關各機關官員亦曾提供所需資料，並花費甚多時間與研究人員晤談、討論。

臺灣糖業公司電子資料處理中心，對所獲問卷資料之處理及製表工作有優異之表現。

中國農村復興聯合委員會之官員對現階段之農業及今後五一七年農業發展之策畫，提供有深度之背景說明。

密西根州立大學與國立中興大學農學院農業教育學系合作，從事研究工作，回溯自民國四十年代末期在當時省立農學院時期業已開始。

密西根州立大學之休假制度，及由美國中西部大學國際活動財務支援會之資助，使筆者能於民國六十四年留駐臺灣五個月，並於六十五年分別於二月及九月再度來臺，推動此一研究工作。

由於自研究工作之資料蒐集開始，以迄於報告之完成，已歷經三十閱月。在此期間，農業職業及技術教育已有若干變易，是以報告中部分資料與現今情況已有不符，但仍不無參考價值。當局能及時的改進教育措施，深表讚佩。

本報告與前民國五十七年所作之研究報告相似，仍採中英文並列方式，中文部分由胡啓和撰寫，英文部分由余執筆。

唐納　梅德思

民國六十六年十月

TABLE OF CONTENTS

目　次

FOREWORD iii
序　言

CHAPTER

I. THE SETTING 1
計畫之設定
  This Study 1
  研究目的
  An Introduction to Taiwan 1
  臺灣簡介
    Agriculture 2
    農業
    Agricultural Goals and Policies 4
    農業目標與政策
    Manpower Development 12
    人力之開發
    Manpower Demand Estimates 14
    人力需求之預估
  Educational Planning 19
  教育計畫
    Goals for Vocational Education in Agriculture 20
    農業職業教育之目標
    Objectives for Higher Education in Agriculture 23
    高等農業教育之目標
    Agricultural Education: Students and Schools 24
    農業教育：學生與學校
  Concerns About Agricultural Education 25
  農業教育之課題
II. PRESENT PROGRAMS OF VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTURE 28
當前之農業職業及技術教育
  Definition 28
  定義
  Vocational Agriculture Programs 30
  農業職業教育

The Schools 30
學校

The Curricula 31
科別

The Students 34
學生

The Teachers 38
教師

The Instructional Facilities 39
教學設備

Special Programs 46
實驗班教學計劃

Technical Agriculture Programs 51
農業技術教育

The Institutes 51
專科學校

The Curricula 52
科別

The Students 56
學生

The Teachers 61
教師

The Instructional Facilities 61
教學設備

Ⅲ. STRENGTHS AND WEAKNESSES OF PRESENT PROGRAM 67
現階段技職教育之檢討

Introduction 67
緒言

The Objectives 68
目標

The Graduates 70
畢業生

The Schools and Institutes 78
農業職業暨專科學校

The Curricula 89
科別

The Students 93
學生

The Teachers 94
教師

The Facilities 95
設備

IV. LOOK AHEAD (RECOMMENDATIONS) 96
未來展望（建議事項）

The System for Agricultural Education 99
農業教育之體系

Manpower Need Assessment 101
人力需求之預估

Technical Agriculture Program 102
農業技術教育

Vocational Agriculture Program 103
農業職業教育

Pre-vocational Agriculture in Middle Schools 111
國民中學之農業課程

Teacher Education in Agriculture 112
農業師資教育

Administration and Supervision 115
行政與輔導

BIBLIOGRAPHY 119
參考文獻

APPENDICES
附 錄

A. Data Collected from Survey of Taiwan Schools with Vocational and Technical Agriculture Curricula, March-May 1975 123
六十四年三～五月調查獲取農業職業及專科學校之各項資料

B. Data Collected from Survey of Graduates from Taiwan Vocational and Technical Agriculture Curricula 131
調查獲取農業職業及專科學校畢業生之資料

C. Maps Showing Agricultural Population, Present Vocational and Technical Agriculture Programs, and Planned Specialized Areas of Agricultural Products by Hsien 136
以縣際区分，農業人口、農會、六十三學年度農業職業學校、農業專科學校及農業專業区分佈圖

D. Project Staff and Cooperating Institutions 155
研究計畫人員及合作機構

I. THE SETTING

計畫之設定

This Study

研究目的

In this study the focus has been placed on an evaluation of the educational programs conducted by Taiwan senior vocational agriculture schools and two junior colleges of agriculture. The program evaluation involved identification of the goals for agriculture; a determination of the objectives for the vocational and technical education programs in agriculture; a review of the present situation in the progams; and finally. an identification of strengths and weaknesses of the present program in terms of both the goals for agriculture and the objectives for the programs. The study includes some recommendations for change for programs in the middle schools, vocational schools, junior colleges, teacher education, and in the administration and supervison of the vocational and technical education programs.

國立中興大學農學院農業教育學系與美國密西根州立大學教育學院中等教育學系合作，於民國五十七年完成「高級中等學校畢業生對臺灣農業發展之貢獻」之研究工作後，復於六十四年初，獲得中美有關機關之資助，再度合作，以如何强化本省農業教育以配合農業發展爲旨趣，從事另一項之研究計劃。並請美國明尼蘇達大學（University of Minnesota）農業教育學系教授馬爾文（R. P. Marvin）於該年春來台作諮商性工作，以求計畫之完整。

本次研究工作重點爲對本省農業職業學校及農業專科學校之評估；包括對農業發展目標之認識；農業職業及技術教育之目標；現階段情況之檢討以及各方面之得失；並對國民中學，農業職業及專科學校，師資，以及行政、輔導等事項之改進作若干建議。

An Introduction to Taiwan

臺灣簡介

Taiwan is a subtropical island approximately 390 kilometers from north to south and with a maximum width, east to west, of less than 150 kilometers. An island comparable in size to Belgium or slightly smaller than the Upper Peninsula of Michigan, Taiwan has much less arable land than either of those areas. The area under cultivation in 1973 was about 900,000 hectares, about one-fourh of its total area. About two-thirds of the total 35,980 square kilometers is highly mountainous.

The total population in 1975 of nearly 16 million people is about double the number in 1950. During the 1950s and until the mid-60s the annual population growth rate was about 3.3 percent. However, the rate had slowed to less than 2.0 percent by the early 1970s and was estimated at 1.8 percent in 1974.

臺灣省爲我國東南沿海處於亞熱帶之島嶼，南北縱長約三九〇公里，東西橫向最寬處約及一五〇公里，面積三五九八〇平方公里，約與比利時相當，爲我國各省面積次小之安東省（六三九〇六平方公里）之二分之一。依六十二年資料，耕地面積約爲九十萬公頃，約達總面積四分之一。山區約佔總面積之三分之二。

民國六十四年，全省人口近一千六百萬，較民國三十九年約增一倍，自四十年代迄五十年代中期，人口增加之速約爲百分之三•三，五十年代末期出生率降至約略低於百分之二，六十三年約爲百分之一•八。

Agriculture. The agricultural and fishery production in Taiwan increased rapidly during the period 1950-1970 and was able to stay ahead of the domestic demand for food and at the same time provide an increasing surplus for export. The production of ample food for local consumption by nearly 16 million people plus a surplus for export from about 900,000 hectares truly represents an outstanding accomplishment, while in this same period many countries with greater natural resources and fewer people were unable to produce sufficient food to prevent starvation or threats of starvation.

Some of the indicators of change in agriculture may be highlighted by the following comparisons between two points in time:

農業 臺灣在民國四十迄六十年代，農業及漁業均有長足之進步，不但可供應國內糧糈之所需，並在外銷方面亦年有增加。似此僅以九十萬公頃之耕地以其生產品除供應內部之需且有餘額外銷，充分顯示其卓越之成就。同此期間，甚多國家雖擁有較豐富之自然資源及較少之人口，仍未能生產足夠之糧食而使其人民遭受飢餓或免於飢餓之威脅。

下列兩個年度有關若干農業變遷指標之比較，可見一斑:

	1950 三十九年	1972 六十一年
Cultivated land area (hectares) 耕種面積（公頃）	870,633	898,603
Multiple cropping index 複種指數	170	176
Agricultural production index (1966-100) 農業生產指數	44.5	122.7

Per hectare yields of major crops (kg/ha) 主要作物生產量（公斤/公頃）		
Rice 米	1,845	3,291
Sweet Potato 甘藷	9,443	13,901
Soybean 大豆	618	1,670
Sugarcane 甘蔗	48,064	78,512
Banana 香蕉	7,990	16,050
Citrus 柑橘	6,067	11,173
Asparagus 芦筍	—	6,697
Pineapple 鳳梨	9,159	25,471
Mushroom 洋菇	—	84,300
Net Value Agriculture Product Exports minus Agricultural Product Imports (U.S. $1,000) 農產品出口減農產品進口淨值（單位：美金千元）	(1952) $47,671	$41,999
Number power tillers 耕耘機數	—	24,400
Per capita income (NT$) 個人收入（單位：臺幣元）	(1966)	
Farm Family 農家	4,509	7,540
Non-Farm Family 非農家	6,464	11,341

Other changes of major proportions also took place in Taiwan's total economy. Industrialization proceeded steadily and with some acceleration in the late 1960s. Measured by percentage of Taiwan gross domestic capital formation, agriculture, forestry and fisheries shifted from 22 percent in 1952 to 9 percent in 1971; meanwhile manufacturing, construction, mining and electricity moved from 34 percent in 1952 to 49 percent in 1971. The value of agricultural exports represented 96 percent of all exports in 1952 but only 20 percent in 1972. Agricultural workers were 59 percent of the total labor force in 1950 but only 29 percent in January, 1975.

The industrialization in Taiwan brought to farm families opportunities for off-farm employment. The drain of farm labor from the farm created labor shortages in farming during peak labor periods such as rice transplanting, weeding and harvesting. In addition, the opportunity for employment in factories during the winter tended to reduce an incentive for multiple cropping. Finally, The wages paid in industry caused an increase in wages for farm work. Shen has described the present situation, since industry overtook agriculture as the primary economic sector, as follows:

> "This change in structure has presented agriculture with new problems similar to those that have arisen at a

> comparable stage in some other industrial countries. With rapid increase in industrial employment, the farmer has faced rising labor costs. This and his increased expense for the off-farm inputs affected his net income. There has been heavy migration to cities, especially among the younger farm people. More and more farm families have turned to part-time farming and depend on off-farm earnings to supplement their incomes. Growth in agricultural production has slowed down." (1:13)*

在臺灣全部經濟體系中亦有其他明顯之變遷，工業化穩定的前進，尤以在民國五十年代末期更爲突出，國內資本總額之形成，農、林、漁、牧等方面由民國四十一年之百分之二十二，降至六十年之百分之九；同期中，製造業、建築業、礦業及電力等，則由百分之三十四遞增至百分之之四十九。民國四十一年出口物品百分之九十六爲農產品，六十一年農產品僅佔出口總額百分之二十，農業工作者在民國三十九年佔全部勞働力百分之五十九、六十四年初降至百分之二十九。

工業化之結果，引發農家人員在農場外尋求就業之機會。農業勞働力之外流，使農場上勞力需求尖峯時期如揷秧、除草及收穫時有人力不足之感。同時，在冬季時亦減少裡作之機會。此外，工業界偏高之工資導致農場工作工資之提高。自工業取代農業成爲經濟之首務以來，沈宗瀚先生對當前情況有以下之論斷：

> 「經濟結構之改變，在農業上所產生之問題，與其他工業化國家在其發展至相同階段所面臨者相同，由於工業方面就業機會迅速增加，農場工資亦行提高，復由於非農業性投資之增大，使農民之淨收入減少，農民尤以年富力强者乃大量湧入都市，專業農戶日漸趨向於兼業，並依賴非農業性收入以補償其所失，農業生產乃告下降。」

Agricultural Goals and Policies. The slow-down in agricultural production and growth rate in the late 60's brought forth some changes in goovernment policies in an effort to revitalize the agricultural sector of the nation. Ten guidelines for improvement of agriculture were adopted in March, 1970 by the Second Plenary Session of the Central Committee of the Kuomintang (KMT) party. The guidelines were;

"To improve the structure of agricultural production;
To enlarge the scale of farming operation;
To promote farm mechanization;

---

* Numbers in parenthesis refer to numbered bibliography and to the page(s) for reference in that item. 參考文獻編號及其所載頁次。

To improve production techniques;
To lower costs of fertilizers;
To lower the farmers' financial burden;
To make reasonable adjustments of the prices of agricultural products;
To improve farm credit and step up agricultural investment;
To strengthen farmers' organizations; and
To improve the welfare of the farmers." (2:4-5)

農業目標與政策 民國五十年代後期，農業成長率及生產之下降使政府重新檢討農業政策，期使農業部門仍能肩負經濟發展所賦之使命。五十九年春，執政黨於二中全會中制定「現階段農村建設綱領」，包括十項基本措施:

改進農業生產結構
擴大農場經營規模
推行農業機械化
提高生產技術
降低肥料成本
減輕農民負擔
合理調整農產價格
改善農業金融及投資
健全農民組織
增進農民福利

The targets and basic policies in the sixth four-year plan for economic development of Taiwan, 1973-1976 were designed as responses to identified problems, one of which in agriculture was described as;

> "…the rapidly developing industry and commerce have created an ever-increasing demand for labor. This has led to a continued migration of rural workers to urban centers and a steady rise in rural wages and agricultural production costs. As a result, earnings from agriculture have relatively declined, enthusiasm in agriculture investment has weakened, and the tempo of agricultural growth has begun to slow down." (2:21)

The framers of the sixth four-year plan desired to strengthen agriculture as a part of the industrializing economy. Some trends which were recognized were: (a) decreasing importance of agriculture in the total economy; (b) decreasing employment in agriculture; (c) poor marketing system for farm products resulting in large price differentials between the production areas and the consumer markets; and (d) increases in costs of agricultural inputs, especially labor, with a reduction in relative income of the farmers.

民國六十二——六十五年之第六期經濟建設四年計劃，在目標與基本政策措施之說明中，對農業方面所遭遇之困難有以下之闡述：

> ……近年來由於工商業快速發展，勞力需要增多，農村勞力大量外移，農村工資上升，增加農業生產成本；因此，農業相對所得偏低，缺乏投資意願，農業成長亦趨於滯緩。

計劃決策人士意欲加强農業使成爲工業化過程中之一部門，現今之趨勢爲：(a)整個經濟體系中農業日趨式微；(b)從事農業性工作者減少；(c)農產運銷制度不良，產品在產地與銷售市場間價格懸殊；(d)農業之投資費用增加，尤以工資爲然，致使農民之收入相對地降低。

One of the seven main targets in the sixth four-year plan dealt specifically with agriculture and two others have direct implications for agriculture. They were:

> "Agricultural research will be stepped up and development of cash crops, forestry, fishery, and livestock industry will be actively promoted in order to raise agricultural productivity and the relative income of the farmers and to accelerate the modernization of agriculture. For the plan period, a 4.1 percent average annual increase in agricultural production is envisaged. The contribution of agriculture to GDP will, however, decrease from 13.8 percent in 1972 to 11.3 percent in 1976."

> "Infrastructure facilities, including electric power supply, transportation systems and harbors, will be expanded to meet economic development needs. The average annual rate of increase for electric power, water supply and city gas is set at 12.1 percent and that of transportation and communications at 9.5 percent."

> "Vocational education and technical training will be intensified in order to raise the quality of manpower to meet economic development needs and increase employment. During the plan period, an average of 180,000 new employment opportunities will be provided each

year." (2:23-24)

在第六期四年經建計劃七項主要目標中，有關農業及與農業有關者爲：

> 繼續加强農業研究，並積極發展經濟作物及林、漁、畜牧事業，以提高農業生產力與農民相對所得，加速農業現代化。計劃期內，農業生產平均每年增加百分之四・一，農業生產佔國內生產毛額之比率，將自六十一年之百分之一三・八，降至六十五年之百分之一一・三。
>
> 擴建電力，運輸及港埠等基本經濟設施，以配合經濟發展需要。計劃期內，電力（包括自來水等）平均每年增加率爲百分之一二・一，運輸通信平均每年增加率爲百分之九・五。
>
> 加强推行職業教育及技藝訓練，以提高人力資源素質，配合經濟發展需要，增加就業機會。計劃期間，就業人數平均每年增加十八萬人。

The targets were translated into constructive programs to be conducted by the various government agencies. Most of these programs were a continuation of previously initiated efforts; however, the priorities and degree of support were increased. These efforts were identified through eight major efforts which have been paraphrased as follows:

A. Improvement of agricultural structure and enlargement of the scale of operations.

- —encourage specialization of farming operations through establishment of specialized agricultural districts;
- —increase the relative proportion of livestock production and fish production within the agricultural structure;
- —encourage larger-scale farming operations for private farms and through joint operation of small farms;
- —increase vocational education in rural areas, and provide guidance for farmers to shift to non-agricultural employment in order to accelerate an orderly outward migration of rural people to urban areas; and
- —strengthen present policies for promotion of industries in rural areas to increase income of farmers.

各項計畫目標釐訂成完善之方案，交由各級機關執行，多數方案均係前期計劃之賡續實施，惟其優先之層次及推行之强度均有所增進。有關農業部門之八項措施及其細目如下：

改變農業生產結構，擴大經營規模。

——建立農業專業區，促使個別農場逐漸趨向專業化經營。
——在農業生產之結構上，繼續提高畜牧與漁業之比重。
——獎勵家庭農場擴大經營規模，提倡共同經營，促進農業生產企業化。
——加强農村地區就業訓練，輔導農民轉業，加速人口外移。
——配合工業政策，輔導已有之農村工業，並發展新的農村工業，以增加農民收入。

B. Improve agriculture productivity and increase agricultural production.

—accelerate agricultural mechanization through low-interest loans for purchase of agricultural machinery and expansion of farm machinery service centers;
—increase productivity of mountain slopes through application of conservation measures on both old and new crop areas;
—intensify plant protection and livestock disease prevention measures, including strict quarantine of imported plants and livestock;
—intensify agricultural research and extension work by providing the institutions with adequate personnel and equipmet and strengthening the organization of the institutions;
—budget additional funds to subsidize the expansion of farmers' association programs;
—provide guidance to encourage production of high economic value crops and crops most adapted to the particular regions; and
—priority will be given to projects aimed at (a) applying integrated techniques for production of rice and other food crops, (b) raising unit area yields, and (c) increasing facilities for harvesting, drying and storing farm crops.

提高農業生產力，擴大農業生產。

——加速推行農業機械化，加强辦理農機低利貸款，推廣農機代耕制度。
——加速山坡地保育與利用，以提高坡地生產力。
——加强植物保護及禽畜疾病防治，嚴格辦理輸入動植物之檢疫工作。
——加强農業研究、試驗與推廣工作，充實試驗與研究人員及設備，强化試驗、研究與推廣機構之組織，以提高農業生產技術。
——寬列推廣經費，補助農會，增强基層推廣工作。
——輔導低產及缺水地區之稻作及其他經濟價值較低之作物，轉作適地適種之高經濟作物。
——優先辦理水稻及其他糧食作物之綜合技術栽培，提高單位面積產量，並增加

收穫、乾燥與倉儲等設備。

C. Improve the marketing system and regulation of prices of agricultural products.

—improve the facilities and equipment at the produce markets at various levels as well as upgrade the management personnel;

—provide more assistance to farmers in their cooperative marketing efforts; improve the grading, packaging, storaging, processing and transporting operations; and strengthen the marketing operations conducted by the farmers' associations;

—improve the market information services in an effort to reduce imbalances in supply and demand and to stabilize the prices of agricultural products;

—promote production and marketing of new crops having export potentialies through contract farming, establishment of an overseas sales promotion network, and incentives for encouraging export;

—taxes collected on staple agricultural imports and exports will be used to improve production techniques, improve transportion facilities and to expand markets; and

—price stabiliztion funds will be established on major agricultural export crops in order to protect the interests of the producers and to ensure the continuing production of these crops.

革新農產運銷、合理調節農產品價格。

——增設各級農產品市場，充實市場設備，提高市場人員素質，提高經營效率。

——改善農產品分級、包裝、儲藏、加工與運輸等運銷實務，輔導農民共同運銷，並加强農會辦理共同運銷的功能，以減輕運銷成本。

——加强國內外市場情報之蒐集與報導，促進供需平衡，穩定農產品價格。

——發展新產品，並對有外銷潛力之農產品訂定產銷計劃，嚴格執行契約生產；積極輔導建立國外市場推銷網，並訂定外銷獎勵辦法。

——對大宗進出口農產品酌徵發展基金，以供改進國內生產、運銷與拓展市場之用。

——對於主要出口農產品，設立平準基金，以穩定價格，安定生產。

D. Improve the farm credit system and increase agricultural investment.

—streamline the farm credit system and promote specialization of financing activities in farm credit institutions;

—strengthen the functions of the Agricultural Credit Planning Committee;

—make available more funds for use in low-interest, long-term loans to implement agricultural policies;

—increase credit lines for farmers and liberalize terms, forms, and procedured for securing loans;

—increase public investment in infrastructure projects such as development of water resources, reclamation of mountain slopes, land consolidation, rural transportation, and crop storage facilities; and

—expand livestock insurance programs; and promote and plan crop insurance programs.

改進農業金融制度，擴大農業投資。

——健全農業金融體系，實施農業金融之分工制度。

——加强中央農業金融策劃委員會功能，統籌運用農業資金。

——配合重要農業政策，增撥專款辦理低利長期貸款。

——擴大農民信用基礎，放寬農貸條件，實施動產抵押，簡化貸款手續，活潑農村金融。

——增加對水利建設、山坡地開發、土地重劃、鄉村運輸及倉儲等基本建設之公共投資，擴大農業生產潛力。

——擴大辦理畜產品保險，研究推動農作物保險，以奠定農作物及其他農業保險之基礎。

E. Reduce the costs of farm requisites.

—replace the fertilizer-rice barter system with a system of supplying fertilizer entirely on a loan basis with farmers having the options of making repayment either in cash or in paddy rice after harvest;

—enforce controls over the quality and sales of pesticides and other agricultural chemicals; import related raw materials and pesticides which cannot be produced locally;

—improve the supply and demand situation for livestock and poultry feeds through establishment of modern feed manufacturing mills, building warehouses, and improving transportation facilities;

—improve the quality of locally manufactured agricultural machinery; and import implents not locally produced or which cannot be economically produced locally; and

—reduce the tax burden for farmers by (a) eliminating the educational surtax on the land tax; (b) improve the practices for levying the land tax; and (c) make a comprehensive study of the agricultural taxes in light of the farmer's ability to pay taxes.

降低農業用品價格，減輕農民負擔。

——廢除肥料換谷制度，實施肥料金額貸款，於稻谷收穫後繳還現金或折還稻谷，由農民自由選擇。

——加强農藥品質及銷售管制，嚴格取締偽劣農藥，統籌進口國內不能生產之農藥及原料。

——建造現代化飼料工廠、倉儲、運輸設備，改進飼料之供銷，以降低飼料價格。

——改進農機具品質，合理調整農機具售價。凡國內不能製造或國內製造不經濟之農機具，將適量開放進口。

——改進隨賦徵購辦法，取銷田賦附徵教育捐，以減輕農民負擔，並參照農民負擔能力，對農業稅賦通盤研究改善。

F. Improve the service of farmer organizations.

—strengthen the basic rural organizations such as farmers' associations, fishermen's associations, farm irrigation associations, and rural cooperatives; and

—raise the quality of the personnel in the farmers' associations and provide guidance and assistance to the organizations for promotion of commercialization of farming.

健全農民組織，發揮服務農民之功能。

——加强農會、漁會、農田水利會以及農村專業合作社等基層組織，使充分發揮爲農民服務之功能。

——提高農民組織工作人員之素質，輔導業務之營運，以促進企業化經營。

G. Improve living conditions and promote the welfare of farmers.

—install water supply facilities; improve environmental sanitation and roads in rural areas; and accelerate activities for promotion of family planning.

改善農民生活環境，增進農民福利。

——加强推行農村社區發展計劃，增建鄉村簡易自來水設施，改善農村道路與環境衛生。

H. Strengthen agricultural administration and upgrade agricultural personnel.

—strengthen basic agricultural administrative agencies by (a) streamlining their organization, (b) upgrading their personnel, (c) increasing their operating funds, and (d) giving them greater responsibility for implementation of agricultural policies;

—delegate more authority to the various levels of agricultural administrative agencies for dealing with agricultural problems; and

—provide better coordination of the demand from agricultural institutions for skilled personnel to implement agricultural development with the supply of agricultural personnel available from the agricultural education institutions. (2:24-29)

強化農業行政組織，培育農業人才。

——充實基層農業行政機構，提高人員素質，增加業務經費，並加重其職權，使農業政策得以順利推行。

——加強各級農業行政之權責，分層負責解決農業問題。

——加強農業教育與農事機構聯繫，推行建教合作，以培養農業實用人才。

Manpower Development. The vocational and technical education programs in agriculture, as well as the programs of higher education in agriculture, have been viewed as the major means of developing the manpower for achievement of agricultural goals. The sixth four-year economic development plan contained a description of the multifaceted approach to be taken to overall manpower development. It included such related areas as (a) family planning program; (b) creation of employment opportunities; (c) long-term educational expenditure policy; (d) improvement of primary education; (e) improvement of junior middle school programs through changes in areas such as industrial arts, vocational guidance and school/industry cooperation; (f) changes in senior middle schools, both vocational and academic; (g) expansion of industry-business based vocational training of present-day workers; (h) employment services; (i) workers compensation and insurance; and (j) strengthening safety and hygiene regulation.

A specific reference to vocational agriculture focused on the enrollment, curriculum, and schools, as shown below:

> The enrollment of vocational agriculture schools will be maintained at 5,000 annually. These schools' curriculum and teaching methods will be adjusted in accordance with needs of rural construction and agricultural mechanization. Some vocational schools will be selected as regional agricultural training centers for assisting farmers in utilizing agricultural machinery and applying new farming techniques. (2:231)

人力之開發　農業職業學校及大專農業院校，被視爲人力之開發以達成農業目標之主要設施。第六期經建計劃中對全面人力之開發，有詳盡之規劃，包括：(a)家庭計劃之推行；(b)就業機會之創設；(c)釐訂長期教育歲出政策；(d)國民小學之改進；(e)國民中學之改進，包括加强工藝及職業選修科教學，擴大辦理建教合作；(f)革新高中及高職教育；(g)擴大辦理企業在職人員訓練；(h)就業之輔導；(i)籌辦職業災害之補償與保險以及(j)加强安全與衛生措施等。

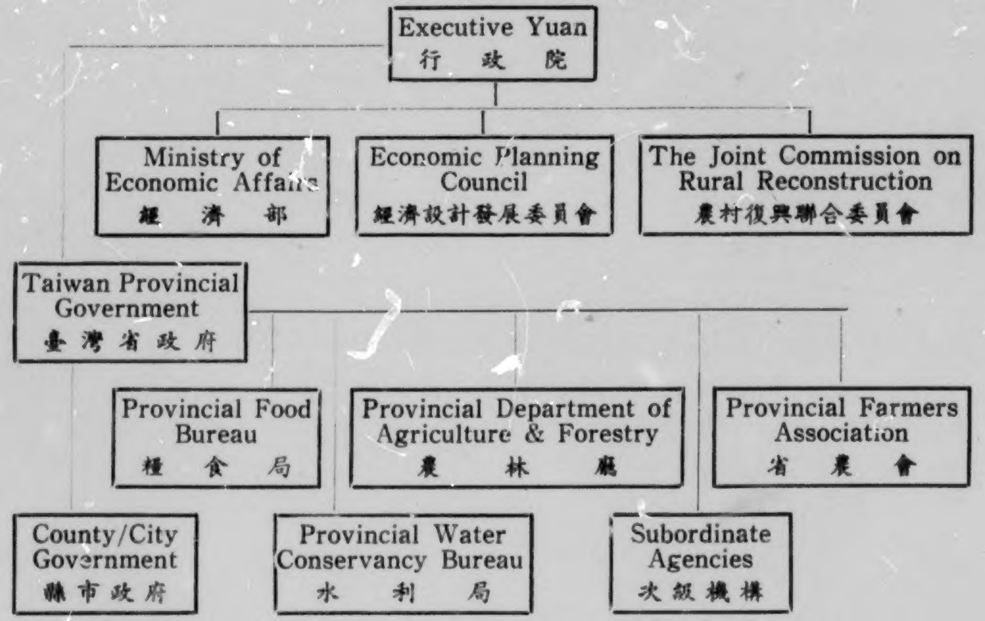
就中對農業職業學校之招生、課程及政策方向等之指標爲：

> 農業職業學校維持原有招生人數每年五千人左右，但爲配合農村建設及農業機械化需要，將全面調整改進現有科別課程及教學，並選擇若干農業職業學校開放爲地區性農業教育訓練中心，以協助訓練農民操作農業機械及運用最新農業新技術，並使成爲農村建設基層幹部人才之培訓中心。

The responsibility for implementing the plan for economic development includes agencies and organizations at the national, provincial, and county levels. However, the Ministry of Education and Provincial Department of Education were not included in the structure, as shown below.

經建計劃之執行，涵蓋中央、省級及縣市級各機關，但未將教育部及臺灣省教育廳包括在內，其架構如下：

Implementation System for Four-Year Agricultural Plan*
四年經建計劃農業部門執行機關系統


Executive Yuan
行政院
Ministry of Economic Affairs
經濟部
Economic Planning Council
經濟設計發展委員會
The Joint Commission on Rural Reconstruction
農村復興聯合委員會
Taiwan Provincial Government
臺灣省政府
Provincial Food Bureau
糧食局
Provincial Department of Agriculture & Forestry
農林廳
Provincial Farmers Association
省農會
County/City Government
縣市政府
Provincial Water Conservancy Bureau
水利局
Subordinate Agencies
次級機構

* Based on notes and a chart from a briefing session in JCRR on March 5, 1975.
此項資料來自農復會。

Manpower Demand Estimates. Manpower requirements in agriculture are those persons required for the production, processing and marketing of food and fiber. Included are the persons directly engaged in production: farmers, ranchers, nurserymen, gardeners and others, some of whom are owner-operators, some managers, some supervisors, some skilled laborers, and others in various skilled and un-skilled jobs. There are other agricultural workers who help the producer such as sales persons for feed, seed, insecticide, fertilizers and others inputs; the advisors such as agricultural extension workers; loan officers in banks; farm reporters for radio, magazines, newspapers and television; and irrigation technicians. There are many people employed in the marketing and processing functions: inspectors, graders, buyers, meat cutters, market managers, and others. Many persons are involved in the development of new knowledge and techniques through research and development in agriculture.

For purposes of classifying present employment in agriculture and future manpower demands two general classifications are usually used. First, all employed persons are classified according the employer. Second, all employed persons are classified according to the kind and level of work perfomed.

人力需求之預估　農業人力之需求，乃指對糧食、纖維之生產、調理及運銷等人員之需要。此項人員包括直接從事生產工作之農人、畜牧業者、園藝業者等，或者爲業主，或者以不同身份受雇他人，從事不同程度之技術性工作，另有協助生產者之農業性工作人員；如飼料、種子、農藥、肥料等之銷售人員，農業推廣人員，農事貸款人員，大衆傳播事業農業消息之報導人員，以及灌溉技術人員等。此外，復有任職於檢驗、分級、屠宰、採購及售貨等業者，亦有甚多人士從事農業研究工作以開拓新知識與新技術。

爲劃分現有之農業性職業類別及未來人力之需求，有兩種常用之分類方法；第一、爲依雇主區分，第二、爲依工作之類別及職等區分。

In the reports from the Taiwan Labor Force surveys the classification by employer, or industry, includes the following ten categories:

1. Agriculture, forestry, fishery, livestock production and hunting
2. Mining and quarrying
3. Manufacturing
4. Electrity, gas and water
5. Construction
6. Commerce
7. Transportation, storage and communication
8. Finance, insurance. real estate, and business service

9. Community, social and personal service
10. Others (miscellaneous)

The same reports conain a classification of the persons in the labor force according to nine occupational groups:

1. Professional, technical and related workers
2. Administrative, executive and managerial workers
3. Clerical workers
4. Sales workers
5. Service workers
6. Farm, forestry, livestock production, fishery and hunting workers
7. Miners, quarreymen and related workers
8. Transportation and communication workers
9. Craftsmen, production process workers & other laborers

根據臺灣省勞動力調查研究所之資料，依雇主或業別區分，有下列十類;

1. 農、林、漁、牧生產事業及狩獵業
2. 礦業及採石業
3. 製造業
4. 電力、煤氣及自來水業
5. 建築業
6. 商業
7. 運輸、倉儲及交通業
8. 金融、保險、不動產及營業服務業
9. 公衆及個人服務業
10. 其他。

同一資料尚有依勞力區分爲九種職群:

1. 專業性、技業性及有關工作人員
2. 管理、行政及經理人員
3. 事務人員
4. 售貨人員
5. 服務人員
6. 農、林、漁、牧工作及狩獵人員
7. 礦業及採石工作人員
8. 運輸及交通工作人員
9. 工匠、生產性等工作人員。

Based on these, or similar definitions, the agricultural manpower resources and requirements in Taiwan have been reported through several sources. A quarterly report during early 1975 indicated the employment in agriculture, by employer, to be 1,509,000 and, by occupational group to be 1,494,000; and 29.14 percent and 28.85 percent respectively of the employed labor force (3:10-13). Wnen reported both by industry and occupational groups the manpower resources in agriculture were estimated as follows (3:30):

根據此項資料，臺灣農業人力之供應與需求情形有不同之估報。六十四年春之資料指稱，臺灣農業性就業人數依雇主區分應爲一、五〇九、〇〇〇人，依職群區分爲一、四九四、〇〇〇人，各佔就業職工總人數百分之廿九•一四及廿八•八五。如依職種並職群類分，農業人力之需求有以下之估計：

Occupational Group 職　群	*Agriculture, forestry, fishery livestock, production, and hunting* 農、林、漁、牧生產及狩獵
Total employed 總人數	1,509,000
Professional, technical & related workers 專業技術及有關人員	3,000
Administrative, executive & managerial workers 管理、行政及經理人員	1,000
Clerical workers 事務人員	13,000
Sales workers 售賣人員	0
Service workers 服務人員	0
Farm, forestry, livestock production, fishery and hunting workers 農、林、漁、牧生產及狩獵人員	1,485,000
Workers in production, 生產性工作人員	
operatives of transportation equipment and laborers, not elsewhere classified 運輸設備之操作及未能分類之工作人員	8,000

The number of persons reported in the agricultural industry group in January 1974 was 1,596,000 and in January 1971 was 1,607,000. The net decline in the employment in agriculture is refleted in the 12,560 annual new entrants estimated for the four-year period 1973-1976 (2:237). That number was to include all occupational groups in agriculture.

民國六十三年一月間依報告顯示，從事農業之人員爲一、五九六、〇〇〇人，六十年一月之資料爲一、六〇七、〇〇〇人。此項從事農業人數之下降，反映於估計六十二至六十五之四年間，每年有一二、五六〇新進人員，該項數字包括進入所有農業性職群中者。

Another method of estimating the manpower demand in agriculture is to look at the number of farm households, the commercial farm population and the agriculturally employed population 15 years old and over. The number of farm households gives some indication of the total farm units, regardless of size of unit. The commercial farm population gives an indication of the number of large scale farming operations which may increase production more through capital intensive practices than labor intensive practices. The data about the agriculturally employed population 15 years old and over, includes more than farmers, But by definition from those who collect and process the data, all of the persons who require agricultural education are not included. For the purpose of this study the new and replacement manpower requirements at the less than baccalaureate degree level have been estimated according to the following formula:

另一種估計農業人力之需求爲檢視農戶數，經濟農場之人口以及十五歲以上從事農業性職業之人員數，農戶之數目可顯示農業經營之單位數而不論其面積之大小，企業農場之人口，可顯示以資本集約方式重於勞力集約方式，以擴大生產之大型農事作業之數量。資料中關於十五歲以上農業性就業之人員當不局限於農民，但資料未包括需要接受農業教育之人員。本次研究，試以下列公式預估大學以下程度。人力之需求：

$$\frac{A+B}{2}+C=\text{Average Annual Entrants Needed in Farming and Non-farming Occupations}$$

農業及非農業性就業者每年需要人數

$A=1\%\times$ Number of Farm Households 農戶數

$B=0.5\%\times$ Agricultural Employed Pop. 15 Yrs. Old & Over
十五歲以上農業性就業人口

$C=2.5\%\times$ Number of Commercial Farm Population 企業農場人口數

The above formula is based on the following assumptions:

1. The number of farm households will remain about constant during the next ten years; and more than one-half of the new heads of households will find employment off the farm.

2. The total number of persons aged 15 and over employed in agriculture will decline slightly each year but the numbers employed in the "under-reported" off-farm occupations will increase.

3. The number of persons engaged in commercial farm operations will remain approximately constant during the next ten years; most of the new heads of households will remain in agriculture on a full-time basis.

Using the above formula, the estimated annual new and replacement entrants into agriculture are as follows:

該項公式乃依下列之設定：

1. 未來十年農戶數將維持一定數目，並有半數以上之新戶長將自農場外尋覓職業。

2. 十五歲以上從事農業之總人數每年將稍行下降，但在農場外就業人數將行增加。

3. 未來十年中從事企業農場之人數將維持一穩定之數字，多數新農戶戶長將爲專業性農事經營者。

使用上列公式，每年農業新進人員之估計爲：

A = Number Farm Families or 868,850 × 1.5% = 13,033
農戶數

B = Agriculturally Employed Population
Aged 15 and Over (January1975) or 1,509,000 × 0.5% = 7,545
十五歲以上農業性就業人口（六十四年一月）

C = Commercial Farm Population or 27,054 × 2.5% = 676
企業農場就業人數

$$\text{Annual Entrants Needed in Agriculture} = \frac{A+B}{2} + C = \frac{20,578}{2} + 676$$

每年農業需要之新進人員

$$= 10,289 + 676 = 10,965$$

This estimate of nearly 11,000 is approximately the same, but slightly smaller than the 12,560 estimated in the Sixth Four-Year Plan.

The demand for technical, managerial and professional workers in agriculture is very difficult to determine. The number of such workers is usually reported through the census or manpower reports as part of the larger group of professional, technical and managerial workers. However, some estimates prepared the Ministry of Education were based on reports of the number of such persons employed in 1974 in teaching and research in agriculture at vocational agriculture schools, two agricultural institutes, and the two agricultural colleges with graduate institutes. The present number employed (5658) was used as a base for estimating annual needs for replacements (retirements, transfer, and death) and new positions. For the ten-year period, 1975-1984 the total demand was estimated to be nearly 8,700, or an average of 870 per year with a high of 1,043 one year and a low of 720 in another year (7: Table 15).

此一數字與前述一一、〇〇〇人幾近相等，但略低於第六期四年經建計劃中估計之一二、五六〇人。

農業所需之專業，技術及經理性人員數量甚難作精確之估計，該項人員需求之數目，常得自整體性之專技及經理人員之統計資料。教育部曾作人力之預估，乃根據六十三年

在各農業職業學校，兩所農業專科學校及兩農學院並研究所中任教之人員之統計數字，現有之任職人數（五六五八）即作爲估計每年新進人員（取代退休，轉業及死亡）數之基準。民國六十四至七十三年十年間農業從業人員之需求估計將近八、七〇〇人，最多及最少需求之年份各爲一、〇四三及七二〇人，平均每年八七〇人。

Educational Planning

教育計畫

The Republic of China has evolved a policy for education based on five main goals adopted in 1962:

- —to establish strong links between economic and educational planning;
- —to enforce science education;
- —to improve the quality of higher education;
- —to reinforce research capabilities; and
- —to modernize social education. (10:65)

A close coordination exists between economic and educational planning. The Ministry of Education has an Educational Planning Unit with responsibility for preparing "long-range educational development plans and to coordinate education with supply and demand for manpower…" (4:5) This planning unit works closely with the Economic Planning Council which has responsibility for the economic development plans for the Republic of China.

The Chinese people have always placed a high priority on education. In Taiwan the Chinese government has promoted education based on the laws and regulations under the Constitution of the Republic of China. The aim of Chinese education is:

> In accordance with the Three Principles of the People, the purpose of Chinese education is to improve national living, to achieve mutual assistance, to develop national economic life and to prolong the life of the nation, so that we can attain, by all means, to independence of the nation, democracy and higher standard of living, and in the end, advance to an ideal world where harmony and equality prevail. (5:4-5)

我國於五十一年設定下列五項目標以指導教育施政方針:

——建立教育計畫與經濟間之堅强聯繫。

——加强科學教育。
——改進高等教育。
——發展研究能力。
——更新社會教育。

教育部由於設立教育計畫小組，製訂教育長期發展計畫，調配教育與人力之需求，故教育計畫與經濟間有密切之協調。教育計畫小組並與制定全國經濟發展政策之經濟設計發展委員會在工作上合作無間。

我國教育有崇高之目標，憲法中對教育與文化亦列有專章，民國十八年公布之教育宗旨爲：

> 「中華民國之教育宗旨，根據三民主義，以充實人民生活，扶植
> 社會生存，發展國民生計，延續民族生命爲目的，務期民族獨立，
> 民權普遍，民生發展，以促進世界大同。」

Goals for Vocational Education in Agriculture. The vocational agriculture schools in Taiwan have been planned and operated to serve the needs of society and of individuals in the area of agriculture. The three basic goals for the junior and senior vocational agriculture programs have changed only slightly since they were published in guidelines dated in early 1952. In general, the vocational agriculture goals focus on preparation of present and future famers, agricultural technicians, and on the establishment of the agricultural schools as community centers. The 1975 revision of the curriculum contains the following three overall goals for senior-level vocational agriculture education:

1. To train students in the knowledge and techniques of modern agriculture to become basic employees in agriculture.
2. To educate the youth to have the ability to farm and the desire to provide services in the rural community.
3. To establish the vocational agriculture school as an educational and training center for improving the farmers' knowledge and skill. (6:1)

農業職業教育之目標　本省農業職業學校爲以對社會之需求及農村青年之施教爲對象。自民國四十一年訂頒農業職業教育之三項目標迄今無顯著之改變。一般言，農業職業教育爲訓練當前及未來農民、農業技術人員，並以農校作爲農村建教中心。民國六十三年重新訂頒之高級農業職業教育目標有下列三項：

1. 傳授現代農業所需之知識及技能，以培養農業基層從業人員，促進農業增加生產與提高品質。
2. 養成青年對農村社會之服務精神與實踐能力，從事農村建設。

3. 建立農校爲當地農民敎育與訓練中心，以增進農民現代化之知識與技能。

The revised curriculum for senior vocational agriculture programs (junior vocational agriculture pregrams were discontinued around 1970) provided goals for each of the eight curricular divisions as follows:

Division of farm management

—to train students in basic knowledge and techniques for modern farm management;

—to train students in methods and skills for modern production farming; and

—to train students to be the extension workers and technicians for rural reconstruction.

Division of farm machinery

—to promote the government policy for farm mechanization;

—to train students to be technicians for operating, maintaining, improving and extending (extension workers) farm machinery; and

—to train students to be willing to serve farmers.

Division of agricultural civil engineering

—to train students in the modern knowledge and skills of agricultural civil engineering to become basic technicians for rural reconstruction.

Division of food procssing

—to train students to be basic technicians for employment in the food processing factories;

—to train students to be managerial assistants and/or researchers in food processing related organizations; and

—to promote effective utilization of farm products as a means of achieving agricultural development.

Division of animal husbandry and veterinary science

—to promote the development of livestock enterprises through students who have studied animal husbandry; and

—to train students in the practical knowledge and skill of animal husbandry and veterinary science to become basic livestock/poultry technicians.

Division of forestry

—to train basic forestry technicians;

—to train students for work in forest technology; and

—to train students to establish private forestry enterprises.

Division of sericulture

—to train students to be technicians for modernizing the sericulture industry;

—to train students for employment in the newly established sericulture project area; and

—to train prospective owners and managers of sericulture businesses.

Division of home economics

—to train students to improve the rural environment through the work of the housewife;

—to train girl students to exercise leadership in rural areas; and

—to train girl students with special skills to prepare them for careers. (6:3-5)

修訂課程標準之同時，並將科別予以精簡，原有之綜合農業、農藝、園藝及農業推廣等四科合併爲農業經營科，連同原有者合計爲八科，並訂定各科教育目標如下：

農業經營科

——訓練學生現代化農業經營基本知識，以創辦農場，加速農村經濟發展。

——訓練學生獲致經營農業生產之管理方法與技能。

——訓練學生瞭解農村生活，以養成農村建設之技術指導與推廣人員。

農業機械科

——配合政府推行農業機械化政策。

——培植農業機械之使用、修護、改良及推廣人才。

——養成學生爲農民代耕及代修農業機械之服務精神。

農業土木科

——傳授現代農業土木之知識與技能，培養基層技術人員，從事農業建設，以達到土地利用之目的。

食品加工科

——培養食品加工之技術人才，以充實食品加工工廠之基層從業人員。

——配合從業機構之管理及研究人員，從事食品工業發展工作，以達國民保健，提高國民生活水準之目的。

——使農產品能充分有效的利用，提高其經濟價值，以鼓勵農業生產及副業之發展，以達繁榮農村之目的。

畜牧獸醫科

——傳授現代畜牧獸醫所需之實用知識及技能，培養將來從事畜牧生產工作的基層技術人才。

——闡明畜牧之重要，啓發學生學習興趣，以利畜牧企業化之經營。

森林科

——培養國家林業基層人才。
——配合國家經建目標培養森林工業技術勞力。
——訓練青年爲自力經營之林農。

蠶桑科

——培養蠶桑專業人才，改進生產技術，促進蠶桑經營之現代化、企業化。
——配合政府創設蠶桑生產專業區之需求，加强培養人力資源。
——爲符合「學以致用」之職業教育宗旨，使能從事蠶業經營及領導地方蠶業生產。

農村家事科

——灌輸家庭主婦應具有的常識進而改進農村環境。
——培養農村婦女領導人才。
——訓練專業技能使具有謀生能力，增加副業收入。

The hours per week for each of the three years for the course areas within each of the eight divisions are shown in the appendices. The courses in each division have been grouped into four areas: general courses, related courses, technical courses, and practice in related and technical courses. In general, about 30 percent of the scheduled 222 hours of instruction for each division in the three-year period are in general courses, 10 percent in related courses, 15 percent technical courses, 40 percent technical practice courses, and 5 percent in elective courses.

各科分年每週授課時數載於本報告附錄中。所有之課程概可分爲四類：普通科目，相關科目，專業科目及專業與相關學科之實習科目。一般言，普通科目佔每週授課總時數二二二小時之百分之三十，相關學科佔百分之十，專業學科百分之十五，實習科目百分之四十，另有百分之五爲選修科目。

Objectives for Higher Education in Agriculture. Higher education in the Republic of China consists of universities, colleges, and junior colleges. The general purpose of agricultural technical education at the junior college level is to teach applied agricultural science and to educate agricultural technicians in a sufficient number for the agricultural development of the nation. The more specific objectives, as stated in a report published by the Ministry of Education, are: (a) To prepare the highly skilled technicians for acceleratine rural development; and (b) to be the training center for upgrading and updating the training of technicians (7: Table 6).

The colleges and universities provide the opportunity for higher levels of learning to prepare specialists and other professional workers. The objectives for agricultural education in the colleges and universities, as given in the publication from the Ministry of Education, are as follows: (a) To prepare the professional workers for planning and improvement of agriculture; (b) To prepare professional workers for research in agricultural science; (c) To prepare the teachers of agriculture for middle schools; and at the graduate level (d) To prepare the agricultural scientists, the agricultural teachers for higher education and to conduct research in agriculture (7:Table 6).

高等農業教育之目標　我國高等農業教育包括大學農學院及農業專科學校。農專所實施之技術教育爲教授應用農業科學，訓練足够之農業技術人才以適應農業發展之需要。教育部改進農業教育規畫小組經徵詢國內農業行政、教育、研究等機構主管專家之意見，整理歸納農業專科學校之目標爲： (a) 培養農業應用技術人員，(b) 爲農業技術服務中心。

大學農學院訓練高級農業技術人才，大學之上復有研究所，根據農業教育規畫小組依上述方式歸納農學院之教育目標爲： (a) 培養農業科學研究、改良、策畫及農業行政之人才，(b) 培養中等學校農科師資，(c) 爲教學、研究、推廣之協議中心。研究所之教育目標爲：(a)培養農業學術研究專門人才，(b) 培養農業專科以上學校師資，(c) 爲農業科學研究中心。

Agricultural Education: Students and Schools. During the 24-year period 1950-1974, significant changes occurred in enrollments in agricultural education programs at the middle school and higher education levels. At the middle school level, both junior and senior middle schools, the total enrollment in vocational agriculture was 12,176 in 1950 and 12,804 in 1974. However, the enrollment rose to a peak of 25,000-26,000 during the years 1961-1967 before declining to the 1974 level. Two other dimensions of change in the vocational agriculture program should be noted: (a) the shift from a majority of the students at the junior middle school level in 1950 to all of the students at the senior middle school level in 1974; and (b) a change from a high of 43 vocational agriculture schools in the period 1957-1959 to 6 vocational agriculture schools and 19 vocational agriculture and industry schools in 1974. In addition, in 1950, the 12,176 students in vocational agriculture represented 35 percent of all vocational students, but in 1974 the 12,804 vocational agriculture students represented only 5 percent of the total vocational enrollment (4:10-14).

農業教育：學生與學校　自民國三十九至六十三之二十四年間，農業職業及高等農業院校入學學生人數有顯著之變動，初高級農業職業學生數，民國三十九年及六十三年分別爲一二、一七六人及一二、八〇四人。但在回降至六十三年之數字前，民國五十至五十六年間則達二五、〇〇〇—二六、〇〇〇人之高峯。農職教育方面應行指出之另外兩事爲：(a)民國三十九年初級農校就學學生人數偏多，六十三年則全部爲高級部學生；(b)民國四十六至四十八年間農校數達四十三所，六十三年則降至六所，另有十九所農工職業學校。此外，民國三十九年上列農校學生人數爲當時全部職業學校學生人數之百分之三十五，但六十三年農校學生人數僅佔該年職校學生總數之百分之五。

Agricultural education at the higher education level experienced considerable change in the 1950-1974 period. The change was primarily in the number of students enrolled in programs at both the junior college and university levels and in the expansion of areas of study at the junior college and graduate program levels. The number of students enrolled in agriculture rose from 1,048 (16 percent of all students in higher education) in 1950 to 10,475 (4 percent of all students in higher education) in 1974. The number of junior colleges of agriculture changed from one in 1954-1964, to two in 1965, to three in 1966, to four in 1967-1968, and back to two from 1969-1974. (Two private junior colleges of agriculture were started but did not survive.) (4:20-27).

Another major change in agricultural education at the higher education level was in the number of graduate schools. The number increased from two in 1950 to twenty in 1974. The 20 were located in the two major universities with colleges of agriculture: National Taiwan University, Taipei and National Chung Hsing University, Taichung, (4:22).

同期間，高等農業教育之改變亦大，主要者爲農業院校就學人數之變動及專科學校數之增減，研究所之增多。民國三十九年農業院校就學人數爲一、〇四八人，爲大專學校人數之百分之十六，六十三年增爲一〇、四七五人，爲大專學校人數百分之四。農業專科學校數在四十三至五十三年間爲一所，五十四年增爲兩所，五十五年增爲三所，五十六至五十七年間再增爲四所，又於五十八至六十三年間復減爲兩所，（兩所私立農業專科學校曾一度設立，後又改制。）

高等農業教育另一主要變動爲研究所之增加，民國三十九年僅有一所，六十三年增至二十所，分別隸屬國立臺灣大學及國立中興大學農學院。

Concerns About Agricultural Education

農業教育之課題

The dramatic changes in the socio-economic conditions in Taiwan which accompanied the rapid industrialization during the late 60's and early 70's brought concerns for ways to make the agricultural education system more responsive to the modernizing agriculture. Some concerns were expressed by principals of schools who indicated vocational agriculture programs in the early 70's had been characterized by:

1. Decline in intereat of students to study agriculture in the senior middle schools. (Perhaps reflecting the decline in farm incomes and increased off-farm employment opportunities.)
2. Non-directive approach from the Provincial Department of Education (PDE) regarding how much, what kind of and where vocational agriculture should be taught. (Stronger emphasis by the Provincial Department of Education on development of vocational industrial programs.)
3. Lack of modern equipment in the laboratories at the vocational agriculture schools.

The Joint Commission on Rural Reconstruction (JCRR), a strong advocate for modernizng Taiwan agriculture, had initiated in cooperation with the Provincial Department of Education some pilot projects in selected vocational schools as one means of promoting curriculum and program change. The Ministry of Education during the spring of 1974 established a committee to study and plan for change in agricultural education at the vocational and technical levels.

由於近十年來本省快速工業化及其相伴而生之社會經濟結構之變遷，如何分肩農業現代化成爲當今農業教育之課題。若干農校校長對民國六十年以還農職教育所面臨之問題認爲：

1. 高中階段之青年對學習農業多不感興趣。（反映經營農事之收入偏低以及非農業性就業機會之增多。）
2. 教育當局對農職教育之忽視並偏重工職教育。
3. 農校普遍缺乏現代化之設備。

農復會曾與教育廳合作從事多項對農職教育改進之研究計畫。教育部於六十三年夏成立改進農業教育規畫小組，對農業職業及專科教育從事規畫研究工作。

In summary the questions which expressed the key concerns about agricultural education were:

1. Who studies vocational and technical education in agriculture?
2. What occupations are entered by those who complete the courses of study in agriculture?

3. Are the objectives of the programs consistent with the present needs in agriculture?
4. Do the curricula and programs reflect the emphases in current agricultural policies?

The general conditions for agriculture are frequently reflected in the conditions for agricultural education. The economic and social conditions which prevail for farmers and those persons who serve farmers appear to have a direct bearing on the interests and attitudes of young people who are preparing for careers. Persons in leadership positions in agriculture and education at all levels must exercise leadership in order to bring about change. The strong expressions of concern by leaders in the Ministry of Education, the JCCR, the Provincial Department of Education, the Provincial Department of Agriculture and Forestry, National Chung Hsing University, principals of schools and others was good evidence that findings from this study and other studies would receive prompt attention.

總之，農業教育之基本問題爲:

1. 農業職業及技術教育施教之對象爲何?
2. 接受農業職業及技術教育之學生將就何種職業?
3. 農業職業及技術教育目標是否與現今農業之需要配合?
4. 課程與教學能否反映當前農業政策?

農業之一般措施常反映於農業教育之施政中，社會經濟對農民及對農業服務人員有利之趨向，常能左右擇業青年之態度。在農業界、教育界各階層居於樞紐地位之人士，在各方面之領導宜精益求精以激發新生事物。由於教育部廳、農林當局、農復會、中興大學及多數校長對農業教育未來之關切，本次研究及其他有關之研究當可獲得深切之注意。

II. PRESENT PROGRAMS OF VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTURE

當前之農業職業及技術教育

Definition

定 義

Vocational and technical education is that education which is designed to prepare individuals for the world of work. Sometimes it is defined as an alternative to academic education; sometimes it is defined as a complement to academic education. In general, vocational and techical education during the 60's and 70's has been seen as a means of providing the necessary skilled and technical manpower for industrializing societies and at the same time, as a means of givng occupational mobility to individuals.

The relationship between vocational-technical education and the world of work usually assumed to be quite direct. That is, if the student selection and the instructional program are appropriate, then a relatvely high proportion of the students who complete the programs will enter into jobs directly related to the instruction. Therefore, manpower and educational planners alike are very interested in identifying both the present and estimated future manpower requirments, not only in numbers of persons needed in various occupational clusters, but also in terms of the competencies required for entry and advancement in the occupations. However, there are many factors in addition to the kind of schooling and characteristics of the students which affect willingness to enter and entry into selected occupations.

職業及技術教育可視爲個人準備就業之教育。有者視其爲獨立於正規教育以外者，亦有視其爲正規教育之補充教育。一般言，近十餘年來職業及技術教育咸認係對行進中工業化社會提供具有專業技術之人力，以及作爲個人改變職業之手段。

職業技術教育與就業之間有直接關係。如學生能各依其興趣之所在接受良好之訓練，畢業後當能覓得與所學有關之工作。因此，人力與教育計劃者均將體認現今以及所預見之將來，人力之需求不僅視各個職群所需之人力數量，亦應考慮新進人員之能力。此外，尚有多種因素包括學校類別，學生之特質等均對職業之選定有所影響。

In the field of agriculture, some of the occupations most readly identified for which vocational-technical education can prepare persons to enter and advance are:

在農業之範疇中，修習職業技術教育者，其就業之領域有：

Farming (Crops, Livestock, Poultry, Fruit, Vegetable)
自營農事（作物、畜牧、家禽、果樹、蔬菜等）
Farm Manager 代營農場
Veterinary Assistant 獸醫助理人員
Agricultural Extension Worker 農業推廣人員
Irrigation Technician 灌溉技術人員
Soil and Water Conservation Technicians 水土保持技術人員
Fruit and Vegetable Grading 果蔬分級人員
Landscape and Flower Garden Technicians 花卉及庭園技術人員
Farm Machinery Operation and Repair 農業機械操作及修護人員
Agricultural Chemical Sales and Application 農用藥劑施用及銷售人員
Agricultural Research Technicians 農業研究人員
Inspectors of Farm Products 農產品檢驗人員

Vocational-technical education is much more than the development of verbal knowledge and manipulative skills for work. It involves development of job competencies, understandings about employment opportunities, application of theory to the performance of practical skills, understanding "why" in addition to knowing "how"; or, in other words, helping persons plan and prepare for "careers" in addition to preparing for a "job".

Some distinctions are usually made in the levels of occupations for which students prepare. These different levels are reflccted in the kind of jobs available to graduates from the vocational programs at the high school and technical programs at the junior college levels. Frequently, advisory committees comprised of representatives from the employers, parents and schools are utilized to offer suggestions in such areas as (a) occupational programs to include in the curricula; (b) facilities and equipment needed; (c) qualifications desired in instructors; (d) major content areas to incorporate into the instructional program; and (e) evaluation of the graduates from the program.

職業技術教育之含義遠超出爲謀生而獲得之口頭上之知識及操作性之技術，而係涵蓋自我能力之發展，瞭解就業方向，能將理論之知識化成有用之技術，除知曉"如何"以外，更應瞭解"爲何"。亦即技職教育旨在協助青年作創業，立業之準備而非僅爲謀求工作。

學生所就之職業，常區分爲若干階層，各個階層即映示農校及農專業生所堪任之工

作。依照教育部規定職業學校得設置顧問委員會，由學校聘請與學校同性質之專家及企業界人士爲委員，其主要職責有：(a)學校發展計劃及科別調查之建議事項，(b)改進職業學科教材及教法之建議，(c)學生校內外實習之指導及連繫事項，(d)輔導畢業生之就業事項及(e)其他有關學校設施之建議事項。

In recent years, mainly in the 70's, there has been a growing interest in alternatives to the formal school or institute based vocational-technical education programs as well as the other formal schooling programs. The formal schools require a high investment in facilities, equipment and staff. More and more frequently the governments in developing countries are finding their financial resources too limited to expand the educational system to the point deemed necessary to provide the skilled and technical manpower. One alternative freqnently considered is nonformal education.* And most recently, the formal and non-formal education programs have more frequently been viewed as complementary forms of education.

近年來，尤以民國六十年以還，職業技術教育與其他正規教育之間，何者應優先發展，日益成爲爭論之課題。職業技術教育需要在師資，備並有較多之投資。開發中國家日漸發現，以其有限之財力實不足以發展其教育體系以訓練符合要求之技術人才。非正規教育之推行亦是待決之問題。最近，正規的及非正規的職業技術教育常被視作互爲增補之教育。

Vocational Agriculture Programs

農業職業教育

The Schools. All senior middle schools in Taiwan were either operated by the Provincial Department of Education or were private. All included the final three grades (10, 11 & 12) in the secondary school system. Six categories of vocational schools existed: agriculture, industry, commerce, marine products, nursing and midwifery, and home economics.

---

* Coombs and Ahmed have defined non-formal education as "any organized, educational activity carried on outside the famework of the formal system to provide selected types of learning to particular sub-groups in the population, adults as well as chidren." (8:8) Brembeck has defined non-formal education as education dealing "with those learning activities that take place outside the formally organized educational system…purposeful attempts to educate toward some *specific goals*, under the sponsorship of an *identifiable person, group*, or *orgnization*." (9:vi)

Coombs 及 Ahmed 兩氏對非正規教育之釋義爲：「正規教育體系之外，任何有組織，有系統之教育活動，對成年人或兒童提供特殊之施教。」Brembeek 氏認爲非正規教育爲「正規教育體系之外，……具有特殊目標，在有資格之人士、團體或機構支助之下，從事之學習活動。」

In 1974-75 there were twenty-eight senior level schools which offered instruction in vocational agriculture, one under Taipei Municipality and the other 27 under the Provincial Department of Education. At least one senior middle school in each of the 15 hsiens offered instruction in vocational agriculture. Four of the schools offered only vocational agriculture curricula and the other schools offered vocational agriculture as part of a comprehensive vocational education program. The schools, their names and locations are listed in the appendix.

Two of the schools, designated to discontine the vocational agriculture curriculum at the close of the 1974-75 year, had enrolled no new students in agriculture during the current year and the previous year. The two schools were: Provincial Hsiuhsui Senior Vocational Industrial School and Provincial Yunching Senior Vocational Industrial School.

學校　臺灣之高級中等學校，或爲省立，或由私立，爲中等教育之最後三個年期（相當於美國之第十至第十二年級。）包括農業、工業、商業、海事、護理及家事等六類高級職業學校。

在民國六十三—六十四年期，全省有二十八所高級中等學校設有農業職業學科。依其建制分爲農業職業學校，農工職業學校及附設農科之高級中學。其中除一所隸屬臺北市外，其餘均由臺灣省轄辦。民國六十三年停止招收農科學生，祇辦理工科者爲省立秀水及永靖兩所農工職校。設有農科學校之名稱及地址均載於附錄中。

The Curricula: The curricula for all senior level schools consist of instructions for three years, two semesters each year. The students are in classes 35-37 hours per week. All curricula, academic and vocational, include general courses such as Chinese, English, Social Science, and Science. The number of hours per week, and the proportion of total hours during the three years vary from curriculum to curriculum.

The school year 1974-75 was the first year for the newly revised curricula in vocational agriculture. The eight curricula promulated in 1974 by the Ministry of Education were:

科別　我國現行之學制爲學年學期制，高級中等學校之學程爲三年，每年兩個學期，每周授課時數爲三五至三七小時。高中及職業學校均設有普通課程包括國文、英文、社會學科及自然學科，每周教學時數及三年授課總時數則依學科之性質而異。

農業職業學校自六十三學年度起，實施由教育部訂頒之新課程標準，經調整後之八種科別爲：

Farm Business (Management) 農業經營科
Animal Husbandry and Veterinary medicine 畜牧獸醫科
Food Processing 食品加工科
Forestry 森林科
Farm Machinery 農業機械科
Sericulture 蠶桑科
Agricultural Civil Engineering 農業土木科
Rural Homemaking 農村家事科

The new curricula gave more emphasis to student "learning by doing" through practice; combined four curricula of Agronomy, Horticulture, Comprehensive Agriculture and Agricultural Extension into one curriculum named Farm Business; and gave more emphasis to the technical courses. In general the proportion of hours of instruction assignied in the new agricultural curricula were as follow:

新課程標準重點在透過實習以加强學生「自做中學」，並將原有之綜合農業、農藝、園藝及農業推廣等四科合併爲農業經營科，並着重技術性科目。八種科別修習科目分類百分比爲：

General Studies 普通科目	30%
Related Courses 相關科目	5%
Technical Courses 專業科目	15%
Technical & Related Practice 專業及相關科實習	42%
Electives 選修	8%

The students were enrolled in 13 vocational agriculture curricula during 1974-75. The largest numbers of students, more than 50 percent of the total 12,080, were enrolled in three curricula: Food Processing, 21 percent; Animal Husbandry and Veterinary, 18 percent; and Farm Machinery, 17 percent. The four farm production oriented curricula of Agronomy, Farm Business, Comprehensive Agriculture and Experimental Farm Business accounted for approximately 15 percent of the enrollment as shown in Figure 1. Data for the enrollment by curriculum, sex and year are given in Table 1, Appendix A.

六十三學年度在校學生分別就讀於十三種科別。全部一二、〇八〇名學生中，有百分之五十以上就讀於下列三種科別：食品加工科百分之二十一；畜牧獸醫科百分之十八；及農業機械科百分之十七。農藝、綜合農業、農業經營以及農場經營實驗班等四種農業生產性科別，合計約佔總入學人數百分之十五。圖 1 顯示一般情形，詳細數字載於附錄 A表 1。

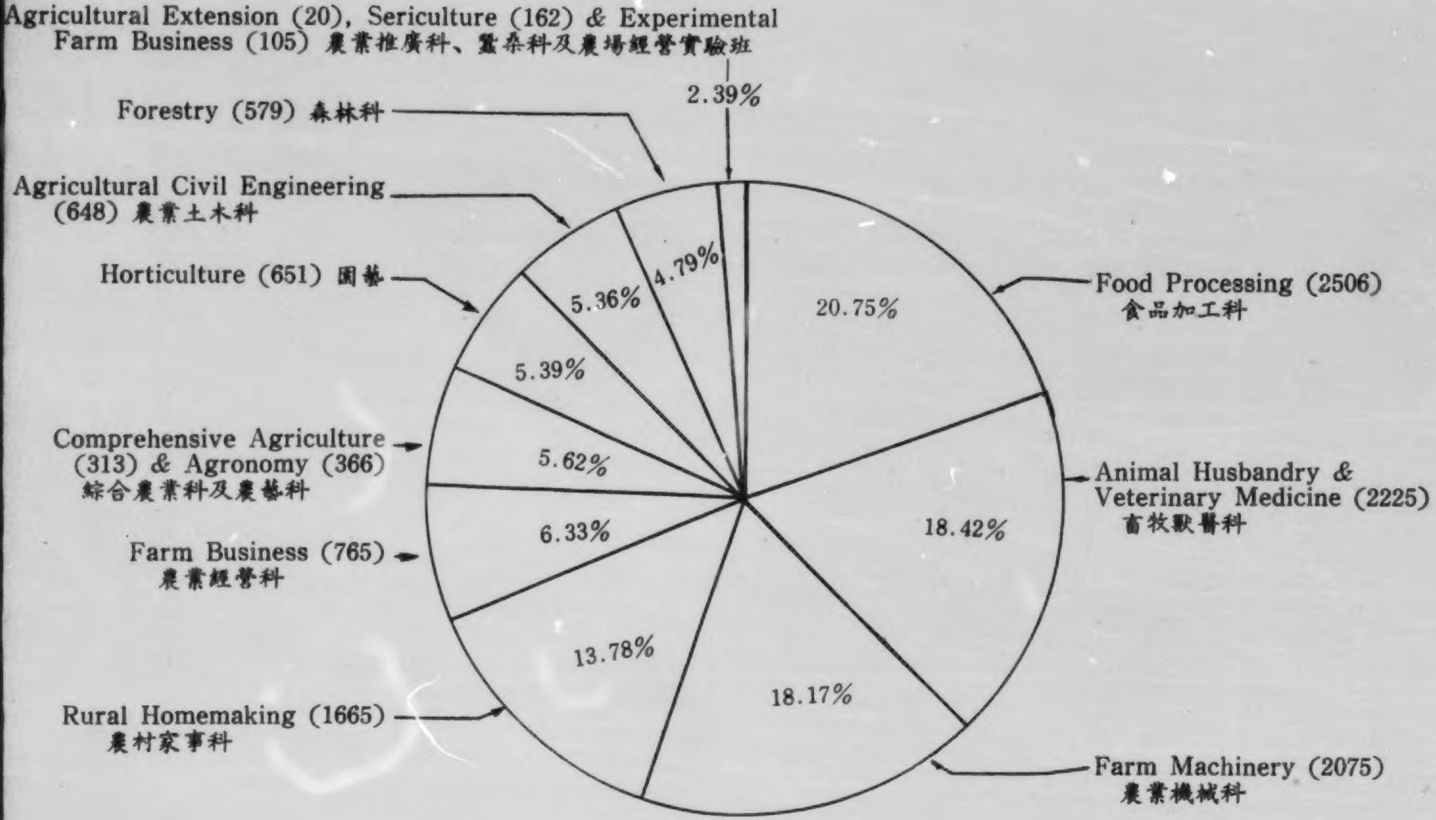


Figure 1. Number and Percent of Taiwan Vocational Agriculture Enrollment by Curriculum, 1974-75.
圖 1. 六十三學年度農業職業學校各科學生人數

The Students: Most of the students were sons and daughters of persons engaged in agriculture and resided on farms. About one out of every two students resided on a farm in either a rural area or within the political boundaries of a city, as shown below:

學生：多數學生均爲農家子弟。約有二分之一之學生居住於鄉村中或城郊，如下所示：

Place of Residence 住　所	*Percent* (*N*=13,188) 百分比
Farm, Rural 鄉區，農村	47.36
Farm, City 城鎮，農村	4.36
Non-farm, Rural 鄉區，非農村	21.69
Non-farm, City 城鎮，非農村	24.95
Unknown 不詳	1.64
	100.00

About one out of every two students had parents who were engaged in agriculture (farming) as shown below:

學生家長約有二分之一從事農業，一般就業情形如下：

Occupation of Parent 家長之職業	*Percent* (*N*=13,828) 百分比
Agriculture 農業	50.53
Commerce 商業	14.51
Government & Education 公教人員	13.44
Industry 工業	10.87
Police & Military 軍警人員	3.07
Professional 專業人員	0.90
Miscellaneous 一般性職業	5.86
Unknown 不詳	0.82
	100.00

Considerable difference was found among the schools in the proportions of students whose residences were on farms. The range was from a low of 7.91 percent for Municipal Taipei Vocational Industrial and Agricultural School to a high of 74.45 percent for Provincial Lungtan VA&I School. The other two schools with relatively high proportions of students from farms were Provincial Tahu VA&I School (73.85%) and Provincial Peikang VA&I Sclool (70.24%). The three schools with the highest percentages of students with residences on farms seem to have two characteristics in common:

1. Both are located in rural areas
2. Both are VA&I schools which provide some range of choices of subjects for study.

The Municipal Taipei Vocational Industrial and Agriculture School is the only school which is located within a large metropolitan area. The three other schools with relatively low percentages of students with residences on farms (Taitung VA&I, 38.16%; Kangshan VA&I, 35.22%; and Hualien V-A School, 38.36%) do not appear to have any particular characteristics in common.

學生住所是否在農村中，各個學校間有甚大之差異。臺北市立工農職業學校祇有百分之七・九一，省立龍潭農工職業學校則高達百分之七四・四五。另兩所學校學生住所在農村中之比率亦高者，爲省立大湖農工職業學校（百分之七十三・八五）及省立北港農工職業學校（百分之七十・二四）。此三所學生住所在農村中有較高此率之學校，有兩點共同之處：

1. 學校均位於農業區
2. 均屬農工職校，學生對修習學科之選擇有較大之彈性。

臺北市立工農職業學校爲唯一位於大都市區內之學校。其他三所學生住所在農村中比率較低之學校：省立臺東農工職校（百分之三八・一六），省立岡山農工職校（百分之三五・二二）及省立花蓮農校（百分之三八・三六），無何共同之特質。

Approximately three out of every four students were boys. Only boys were enrolled in Agronomy, Agricultural Extension, Forestry, Animal Husbandry and Veterinary, Agricultural Civil Engineering, and Farm Machinery. The Rural Homemaking curriculum was enrolled in only by girls. About one-half of the Horticulture enrollment was girls; and one-third of the Food Processing enrollment was girls.

The students described above were not all of the students who applied for entrance into the vocational agriculture programs. The twenty-eight schools enrolled 3494 boy students and 1055 girl students in the 1974-75 first-year classes. Reports from eight of the schools indicated about 60 percent of those who applied for admission were admitted. Nearly all of those who were admitted had a background of academic junior middle school. (The former junior middle school vocational agriculture programs had been phased out by the summer of 1970.)

學生中，男生人數約佔四分之三。就請於農藝、農業推廣、森林、畜牧獸醫、農業

土木及農業機械等六科者均爲男生。就讀於農村家事科者則全爲女生。就讀於園藝科及食品加工科之男女生，各佔二分之一及三分之一。

二十八所學校六十三年入學學生共有三、四九四名男生，一、〇五五名女生。上述學生並非全係志願就讀農校者，由八所學校資料顯示錄取率約爲百分之六十，幾全部爲初級中學畢業者。(初農五十七年已停止招生。)

Also, admission procedures for entrance into the vocational agriculture programs perhaps screened out some of the students who were most interested in agriculture. Entrance is gained only through an entrance examination. Early in the summer prior to the opening of the new school year, the usual practice is for the several schools to administer a combined examination for entrance into all senior level schools within a given political area. Sometimes two examinations may be held; the first for all students seeking admission to the academic schools and the second, two or three weeks after the first, for students seeking admission to the vocational schools. Taichung City is an example of the later situation. The examination in Taichung City during the summer of 1974 provide an example (12).

在甄選學生進入農校之方式上，可能排除若干對農業有興趣之青年。入學考試爲唯一之甄選方法。暑假中，同一縣市之高級中等學校組成一聯合招生委員會，或者先舉行普通高中之考試，然後再舉辦職業學校之考試，臺中市即採行後述之方式，民國六十三年臺中市舉辦之考試可作一例示。

During that summer 12,160 students took the second combined examination for admission to five provincial senior vocational schools, one provincial academic school (Provincial Nantou Academic High School) and 11 private academic and vocational high schools. About three percent (313) of the students marked their first choice to be in one of the seven curricula in the Provincial Taichung Senior Vocational Agriculture School. (The Taichung Senior Industrial School had 72.3 percent; the Nursing School, 15.2 percent; and the Home Economics and Commercial School, 9.3 percent.) Those 313 first priorities for the Taichung V-A School were divided among the curricula as follows: Farm Machinery, 161; Farm Business, 56; Forestry, 27; Food Processing, 25; Animal Husbancry and Veterinary Medicine, 16; Agricultural Civil Engineering, 21; and Home Economics, 7. Each student could mark in rank order, more than 50 prioity areas of study; but the usual practice was reported to be to mark only a few choices.

該年夏有一二、一六〇名學生參加由五所省立職業學校，一所省立高級中學（省立

南投高中）及十一所私立職業學校聯合舉辦之第二次聯合招生。約有百分之三之學生(三一三人)選擇臺中農校七種科別之一爲其第一志願(臺中高工有百分之七二・三；護校百分之十五・二；家職及商職百分之九・三)。此三一三名以臺中高農爲第一志願之學生，以科別區分計：農業機械，一六一人；農業經營，五六人；森林，二七人；食品加工，二五人；畜牧獸醫，一六人；農業土木，二一人；及家事七人。學生所能選擇之志願科別在五十種以上，但資料顯示，各生填寫者爲數不多。

The placement of the students is based on their combined scores on the five-part examination (Chinese, 200 points; Mathmetics, 120; Social Science, 140; Natural Science, 140; and English, 100). Placement was determined as follows:

1. The school determined how many students and the minimum number of examination points to accept in each curriculum.
2. The total score for each student was determined.
3. The number of students at each score level was determined.
4. The students with scores at specified levels were then assigned according to their written preferences. Students with acceptable levels of scores could be assigned to an area not among their written priorities, if space was available.

學生之錄取與分發，依據五種學科考試成績而定(國文，二〇〇分；數學，一二〇分；社會學科，一四〇分；自然學科，一四〇分；英文，一〇〇分)。其程序爲：

1. 學校決定錄取人數及各科錄取標準。
2. 核計各生總成績。
3. 統計達到各科錄取標準之學生人數。
4. 依據各生所得分數之高低及所填志願之先後予以分發。學生所得分數如達錄取標準，得分發至未填志願但有空餘名額之科別。

It was estimated that perhaps one out of every two students who took the second combined examination had been among the 15,000 who took the earlier examination for entrance into the academic schools in the Taichung area. About 50 percent of the first group of students with highest scores, were accepted into the academic schools. Students with lower scores and those who did not try the first examinations then took the second examination.

Students with priority in agriculture may have scores too low to be placed in his priority area. For example a student might mark his top seven priorities to be, in order, the curricula in the Taichung V-A School. Due to the system, he may or may not get an opportunity to enroll in the V-A School; and if he does get admitted to the V-A School, it may or may not be to the curriculum in which he is really interested.

據估計參加第一次聯招一五、〇〇〇名學生中，有半數被錄取，百分之五十成績較高之學生進入普通高中。成績較差及不擬參加第一次聯招者乃參加第二次聯招。

對農業有興趣之學生，由於考試成績太差或不能達其所願，如某一考生依其志願順序，填列臺中高農七種科別，由於分發程序之限制，或不可能分發至志願學校及志願修習之科別。

The Teachers. The minimum qualifications for teachers in senior secondary schools, like the schools offering vocational agriculture curricula, varied according to the courses taught. Teacher of general courses—Chinese, English, Social Studies and others—could be certified to teach if they met one of the following qualifications (5:22):

1. Graduated from a normal college or university majoring in the subject to be taught or have earned more than 20 credits on the subject to be taught.
2. Graduated from graduate school with master's degree and earned more than 20 credits on educational subjects.
3. Graduated from the same or similar department of university or college and earned more than 20 credits on educational subjects and more than 20 credits on the specialized subject.

The teachers of the vocational agriculture subjects could be certified if they met one of the following qualifications (5:23):

1. Graduated from normal university or college, or ordinary university or college in a department especially for training vocational teachers.
2. Graduated from university, college or graduate school with master's degree majoring in the same subject and having earned more than 20 credits on educational subjects.

教師　高級中學教師最低資格之限定，以高農言，依所授課程類別而定。擔任普通學科——國文、英文、社會學科等之教師，須具有下列資格之一：

1. 師範大學或師範學院畢業，主修任教學科之本科系或修畢關係任教學科之科目二十學分以上。
2. 獲得碩士學位並修習教育學科二十學分以上。
3. 大學或獨立學院本科系或相關科系畢業，並修習教育學科及專業學科各二十學分以上。

農業專業學科教師須具有下列資格之一：

1. 師範大學、師範學院或普通大學院校專業師資訓練系科畢業。
2. 大學院校畢業或獲得碩士學位，主修任教學科之本科系並修畢教育學科二十學分以上。

Some data about the qualifications and characteristics of the teachers were gathered during visits to some of the schools. Nearly all teachers, both for general subjects and agricultural subjects, were graduated from colleges and universities; and they met at least the minimum requirements for certification. Graduates from the Department of Agricultural Education, National Chung Hsing University (the only Department of Agricultural Education in Taiwan) were found in all of the school. The agricultural teachers in the schools were much more likely to be graduates from the College of Agricultural, National Chung Hsing University than from the College of Agricultural, National Taiwan University.

當訪問部分農校時，曾獲取若干教師方面之資料。絕大多數教師包括任教普通學科及專業學科，均爲大專畢業者，符合任教資格之規定。中興大學農業教育學系（我國唯一之農業教育學系）畢業學生遍佈各校。專業學科教師來自中興大學農學院遠多於臺灣大學農學院者。

There were 493 teachers of agricultural courses in the twenty-eight senior middle schools which offered vocational agriculture curricula (13:76-77). There were 152 teachers of pre-vocational agriculture courses in the junior middle schools (13:104-105). The certification statuses of both groups were as follows:

二十八所農校及綜合高中有四九三位農科教師。國民中學擔任農業選修科目有一五二位教師。其任用資格情形如下：

	Vocational Agriculture Teachers 農校專業教師	*Pre-Voc. Agr. Teachers* 國中選課教師
Certificated 合格教師	440	126
Not Certificated 不合格教師	3	18
Non-certificated Probation 試用教師	48	5
Non-certificated Intern 實習教師	2	2
Substitute 代用教師	0	1

The Instructional Facilities. The schools should have facilities for student practice. Until, or unless, the student has practiced, he probably has not learned. The instructional facilities include land, laboratories, livestock and equipment of various kinds. The amount and condition of such facilities has a strong influence on the quality of the instruction. Without opportunities to put theory into practice (to learn by doing) or to use practice to discover general principles (doing to learn), the instruction is less likely to be vocational.

The schools need school land for student practice in all of the curricula except Food Processing, Rural Home Economics and Agricultural Civil Engineering. Practice under supervision is not feasible for most of the students on home farms because (a) about one-half of the students do not live on farms and (b) most of the home farms are so small that all few opportunities exist for practice related to classroom instruction.

教學設備　學校應有各種教學設備以供學生實習，學生如不從事實習，可謂未曾學習。教學設備包括土地，實驗室，家畜以及各種器材。設備之數量，品質對教學之績效有極大之影響，除非將理論付諸實證（從工作中學習），或以實踐方式證現原理（寓學習於工作），則農校之教學不能稱爲職業性。

農校除食品加工，農村家事及農業土木三科外，均需要農地以供實習。學生家庭農場實習輔導辦法不易實施，乃由於約半數之學生未居住於農村中，且多數之家庭農場面積過小，致所有少數實習僅局限於與課堂教學有關者。

The schools reported land totaling 764 hectares. The range in area was from Ilan VA&I School with nearly 200 hectares to Hsiuhsui VI School with about four hectares. The average amount of land per school was about 26 hectares with nearly five hectares in campus, athletic fields, and other non-farm practice uses. The total land available (paddy, dryland, orchard, vegetables, livestock, forest and other) for educational purposes was reported to be 616 hectares, or about 21 hectares per school. With 12,090 students enrolled, the average amount of land for practice per student was 0.0509 hectare. The number of students ranged from 1,087 at Hualien V-A School to 43 at Yuching Conprehensive High School.

The land available for practice to the students in the curricula which require practice on land (excluding the Forest land) was 233 hectares. The 6,682 students (excluding students in Forestry, Food Processing, Rural Home Economics, and Agricultural Civil Engineering), had on the average 0.0349 hectares per student.

Five schools had the forestry curriculum, enrolled 579 students in forestry, and had 333 hectares of forest land. But two of the five schools reported no forest land; and five schools without the forestry curriculum reported a total of 50 hectares of forest land.

二十八所學校校地總面積爲七六四公頃。面積大小之等級自宜蘭農工之約二〇〇公頃至秀水工校之四公頃左右。平均每校約有二六公頃，包括約有五公頃之校園，運動場等非實習用地。全部可資利用之實習地（水田、旱田、果園、蔬菜區、牧場、林場等）總計約六一六公頃，每校平均得二一公頃。以一二〇九〇名在校學生計，每一學生配得之實習地爲〇•〇五〇九公頃。各校學生人數不等，花蓮農校有一〇八七人，降至玉井綜合高中爲四三人。

可資利用之土地以供各科學生需要土地作實習者（林地除外）爲二三三公頃。六六八二名學生（除去森林、食品加工、農村家事及農業土木等科學生）平均每生可配得〇•〇三四九公頃實習地。

有五所學校有森林科，學生人數五七九名，有三三三公頃之林場，但其中有兩所學校稱未有林場。另有五所無森林科之學校聲稱擁有林場，其總面積有五〇公頃。

Livestock and poultry, with appropriate equipment and housing are needed for students to learn practices and principles of production and management. Also, the animals and poultry are needed for the veterinary curriculum. Twenty-three schools had the Animal Husbandry and/or Veterinary curriculum. Although each school was given an opportunity to indicate whether or not the amount of animals and poultry, most of the schools failed to indicate the two quality aspects of the facilities. The limited responses are shown below:

家畜家禽以及適當之設備與場舍，對學生學習飼養與管理甚爲重要，並對獸醫課程亦有其需要性。有二十三所學校有畜牧獸醫科。多數學校對禽畜數量未提供資料，部分數字如下所示：

	No. Schools 填報校數	*No. Head* 頭　數	*Sufficiency* 多　寡	*Conditions* 情　況
Cattle 牛				
Dairy 乳牛	17	108	8 Sufficient 可 6 Lacking 欠	8 Good 良 3 Poor 差
Beef 肉牛	7	23	3 Sufficient 可 2 Lacking 欠	4 Good 良 1 Poor 差
Water Buffalo 水牛	15	24	6 Sufficient 可 3 Lacking 欠	6 Good 良 2 Poor 差
Swine 豬	18	241	4 Sufficient 可 6 Lacking 欠	9 Good 良 2 Poor 差
Chickens 雞	17	3187	8 Sufficient 可 3 Lacking 欠	9 Good 良 0 Poor 差

The livestock and poultry number and condition, as well as the buildings and equipment were observed during visits to the schools. The livestock and poultry programs appeared to receive a lower prioirty than both the farm crop and farm machinery programs. The feeding practices ranged from very good to signs of neglect. The housing and equipment ranged from excellent to poor, with most schools having inadequate housing and equipment. In general, the best farms in the area had better feeding, housing and management practices for livestock and poultry than the majority of the schools.

在訪問農校時，獲睹有關家畜家禽之飼養以及設備，場舍之情形。畜牧在學校中似不若農業及農業機械方面之受到重視。禽畜飼養之優劣，參差不一。場舍及設備有者甚佳，多數學校均甚簡陋。一般言，農校畜牧方面之飼養，場舍及管理情形較校外經營者爲差。

Farm mechanics is a relatively new part of the vocational agriculture program in Taiwan. It has been introduced both as a separate curriculum and in the form of some competencies in other curricula. All of the vocational agriculture curricula, except Sericulture, require "Farm Practice". Therefore, all of the schools should have basic farm machinery, tools and equipment, such as sprayers, in sufficient quantity for efficient use in the instructional program. Reports received from the schools indicated a wide variation in the farm machinery, tools and other equipment available at each school.

All schools had basic farm shop equipment. The amount and condition of that equipment ranged from inadequate at several schools to good and adequate at most of the 17 schools which offered the Farm Machinery curriculum. The seventeen schools enrolled 2,075 students in the Farm Machinery curriculum, 798 in the first year, 660 in the second year, and 617 in the third year. The amount of farm machines and equipment reported by those 17 schools was as follows:

農業機械在本省農職學校中爲一相當新穎之部門，不但以一獨立之科別並以充實其他科別而設置。農校中除蠶絲科外，其餘各科均有"農場實習"，是以各校均應擁有足够之農業機械設備，工具如噴霧器等以加强教學績效。各農校現有之農業機械，工具等差別甚大。

所有學校均有農機具工廠。設有農業機械科之十七所學校，其農機具之數量與品質有者較差，多數尚稱良好。十七個農業機械科共有二〇七五名學生；一年級七九八名，二年級六六〇名，三年級六一七名，十七所學校所保有之農機具情況如下：

Kind of Equipment 類 別	*Average Number Per School* 每校平均數量	*Number Schools Having None* 無該項設備學校數
Tractors 曳引機	0.88	8
Power Tillers 耕耘機	5.12	0
Rice Seeding Transplanters 插秧機	2.76	2
Rice Binders 水稻綑紮機	0.59	10
Rice Threshers 脫谷機	3.00	1
Rice Combines 水稻聯合收穫機	1.18	7
Spray Equipment 噴洒設備	3.12	1
Electric Welders 電焊機	1.47	1
Gas Welders 氣焊機	0.82	4
Water Pumps 水泵	0.35	14

The other thirteen schools reported some farm machinery and equipment as follows:

其他十三所學校農機具設備爲：

Power Tillers 耕耘機	9
Rice Seeding Transplanters 插秧機	14
Rice Binders 水稻綑紮機	11
Rice Combines 水稻聯合收穫機	3
Electric Welders 電焊機	4
Spray Equipment 噴洒設備	44
Gas Welders 氣焊機	7
Water Pumps 水泵	4

The increasing importance of farm mechanics as part of the vocational agriculture instruction was underscored by the mechanization taking place on the farms in Taiwan. The number of power tillers incerased from about 7,800 in 1964 to nearly 38,000 in 1973. And several new types of farm machines such as rice seedling transplanter and rice combine have been adopted by rice farms in resent years.

本省耕耘機之數量，民國五十三年約有七八〇〇部，六十二年已增至約三八〇〇〇部，若干新型農業機械，如插秧機、水稻聯合收穫機等近年來已廣泛使用。由於本省農業機械化之積極推行，農校農業機械方面之教學乃日趨重要。

Food processing in Taiwan has become an internationally competitive industry. The graduates from the Food Processing curriculum in the vocational agriculture schools have contributed to the development. In 1975 there were 25 schools, at least one in each hsien except Nantou, which offered the Food Processing curriculum. About one-fourth of the over 2,500 students enrolled in Food Processing were girl students; and nearly 40 percent of the enrollment was in the first year of the three-year curriculum.

The schools reported on the kind and the conditions of food processing equipment available for use in the laboratories. Most of the schools had some canning equipment but indicated the equipment was unsatisfactory. Some schools had dehydration, fermentation and freezing equipment, but only a few indicated the equipment was satisfactory as shown in Table 1.

本省之食品加工業業已發展成具有國際競爭性之龐大企業。農校食品加工科之畢業生對此一發展曾作出貢獻。民國六十四年，除南投縣外，位於各縣市之二十五所農校均設有食品加工科，兩千五百餘名該科學生中，約有四分之一爲女生；一年級學生人數約佔三個年級學生總數百分之四十。

各個學校均曾提出該校食品加工器具之種類及使用情況，多數學校均有若干製罐設備，但對之均不表滿意。亦有若干學校具有脫水，發酵及冷凍設備。僅有少數學校對食品加工方面之設備表示滿意，其情況如表1：

Table 1. Number of Schools Having Each of Four Kinds of Food Processing Equipment and Condition of Equipment

表 1. 具有四類加工設備之學校數及使用意見

Kinds of Equipment 類別	Number of Schools 學校數			
	Without 無	With 有	Condition of Equipment 使用情況	
			Unsatis. 不滿意	Satisfactory 滿意
Canning 製罐	6	19	17	2
Dehydration 脫水	10	15	14	1
Fermentation 發酵	13	12	9	3
Freezing 冷凍	15	10	9	1

Source: Reports from schools

Observations made during visits to the schools confirmed the lack of modern equipment and the use of out-dated laboratories. Private food processing factories (food canning, frozen foods, beverage, and soybean sauce plants) abound in Taiwan, especially in the southern and central hsiens. The schools usually had food processing factories within 10-15 minutes driving time from the school. In 1975 there were 211 food processing plants registered and 52 of them were in Changhwa Hsien, an agricultural hsien in the central part of the west side of Taiwan.

Dormitories for students provided added flexibility in the enrollment practices and additional alternatives in the instructional program. Fifteen of the schools had student dormitories available in 1975 with total capacity for approximately 2200 boys and 500 girls. Dormitories were available at the folowing schools (with capacity and condition for boys and girls in parentheses).

在訪問農校之過程中，獲睹各校實際缺之現代化之加工設備及實習場所之陳舊情形。本省尤以中南部各縣市，私人經營之食品加工企業，包括製罐，冷凍，飲料及醬油等爲數甚多，多數農校在其一〇～一五分鐘行車距離內即可到達此等工廠。民國六十四年有二一一所註册之工廠，其中有五十二所位於中部之彰化縣。

學校是否備有學生宿舍，對學生之入學以及教學頗有影響。六十四學年度，有十五所學校備有宿舍，總共可容納二二〇〇名男生及五〇〇名女生，具有宿舍之學校及其容納人數，設備優劣如下表：

Schools 學　校	*Boys/Girls* 男生/女生	*Condition* 情　況
Provincial Hualien V-A 花蓮農校	(200/32)	(Excellent 良/Excellent 良)
Provincial Taichung V-A 臺中農校	(200/0)	(E 良/—)
Provincial Tainan V-A 臺南農校	(100/20)	(Poor 差/Poor 差)
Provincial Kwansi V-A 關西農校	(50/0)	(E良 /—)
Provincial Chiatung V-A 佳冬農校	(95/50)	(E 良/?)
Provincial Jenai V-A 仁愛農校	(250/120)	(P 差/E 良)
Provincial Ilan VA&I 宜蘭農工	(80/20)	(Good 可/Poor 差)
Provincial Taoyuan VA&I 桃園農工	(110/0)	(G 可/—)
Provincial Yuanlin VA&I 員林農工	(105/0)	(Good-Poor 可-差/—)
Provincial Taitung VA&I 臺東農工	(280/60)	(E 良/E 良)
Provincial Lungtan VA&I 龍潭農工	(80/0)	(P 差/—)
Provincial Hsiuhsui VA&I 秀水農工	(80/0)	(P 差/—)
Provincial Peimen VA&I 北門農工	(43/14)	(E 良/?)
Provincial Neipu VA&I 内埔農工	(330/132)	(E 良/E 良)
Provincial Yuching Compr. 玉井高中	(—/20)	(—/P 差)
Provincial Hsilo Compr. 西螺高中	(150/0)	(E 良/—)

At least one school with dormitory space for student was available in each hsien with the exceptions of Chiayi and Kaohsung. Approximately 70 percent of the dormitory capacity was rated "Excellent" in condition by the reporting schools.

The classroom capacity for the vocational agriculture classes was reported to be sufficient for nearly 30,000 students. About 60 percent of the classrooms were reported to be in "Excellent" condition, about 20 percent "Good" and the remaining 20 percent "Bad". During visits to the schools some new construction was observed and some schools were still using old wooden classroom building which had been erected prior to 1945, Most of the new construction was classrooms and laboratories for the vocational industrial curricula at the vocational agriculture and industry schools.

The space for the administrative functions was reported to be "Sufficient" by 75 percent of the schools. The condition of about 60 percent of the space was described as "Excellent"; about 15 percent, "Good"; and 25 percent, "Poor".

Faculty residences or dormitories are normally provided by the schools. The reported capacity was for 760 families with the condition of about 60 percent of the residences rated "Poor" and about 25 percent, "Excellent".

除嘉義及高雄兩縣外，位於其餘各縣之學校均供有學生宿舍，根據各校提供之資料，宿舍情況百分之七十均屬良好。

農校教室之數量，據稱可容納近三〇〇〇〇名學生，百分之六十情況良好，尚可使用及情況較差者各有百分之二十。新的建築以及舊有木造教室仍在使用之情形均在訪問農校時獲見。某些木造房舍建於本省光復以前。農工職業學校多數新建之教室及實驗室，多爲工科部門之教學而設置。

有百分之七十五之學校聲稱其行政管理用之房舍足敷使用。其中百分之六十認爲情況良好，百分之十五認爲尚可，另有百分之二十五表示較差。

教職員宿舍例由學校供應，各校之總數爲七六〇戶，其中百分之六十情況甚差，良好者約有百分之二十五。

Special Programs. Several special programs have been conducted in recent years, some still underway, to strengthen the work of rural development by the schools. Three kinds of experimental classes, a series of training sessions to promote farm mechanization, and several rural youth guidance activities have been promoted by the Provincial Department of Education (14:4-6).

The three experimental classes consisted of (a) Experimental Farm Management Class, (b) Experimental Dairy Cow Management Class, and (c)

Experimental Silkworm Mulberry Class. The Farm Management Class was conducted in four Provincial schools; Tainan V-A School, Chiatung V-A School, Yuanlin VA&I School and Peikang VA&I School.

The Experimental Farm Management Class was started in 1972 by the Provincial Department of Education with cooperation and financial support from the JCRR and the PDAF. The class involved special arrangements for enrolling students without taking the usual entrance examination. The purpose of the special class, in each of the four schools, was to provide agricultural instruction to young men who were interested in farming and who had opportunities to farm. Potential students had to meet selection criteria for age, health, size of farm (at least 1.0 hectare), be recommended by the local Farmer Association for their home village and agree to remain in the village for at least three years after completing the program.

實驗班教學計劃　近年來教育廳爲加强農校對農村之發展工作，舉辦若干實驗性教學計劃，以增强農業之機械化以及農村青年之輔導活動。

此項實驗性教學計劃包括：(a)農場經營實驗班，(b)乳牛經營實驗班及(c)蠶業經營實驗班。農場經營實驗班由臺南農校、佳冬農校、員林農工及北港農工等四所學校辦理。

農場經營實驗班之開設，始自民國六十一年，由教育廳主辦，並獲農林廳及農復會之合作及財務上之支援，其目的爲對農業有興趣並確能經營農事之青年，授以農業方面之知識與技能。學生入學不經由聯合招生之考試，符合要求之農村青年，經依年齡、健康、自家農場面積大小（不得少於一公頃）等條件之選取，由各地農會向校方推薦而入學，畢業後至少須留家務農三年。

The first two years of the three-year curriculum were spent at the school (lodging provided, no vacations, and scholarships for basic expenses) with about 50 percent of the time in actual field practice (see Appendix A); and the third year was spent working on the farm of an outstanding farmer within the village area. Approximately 80 percent of the earnings from the in-school practice was returned to the students as additional incentives for adoption of improved production practices.

During the third year, the students returned to the school for one day each month for discussion with the teacher. The teachers were responsible for supervision of the student farming programs; receiving student practice reports; visiting the student and his family; and evaluating student performance.

三年學程之頭兩年，學生在學校中受課（供應宿舍，不放寒暑假，免繳學雜費），所授課程百分之五十着重在田間實習方面（見附錄A）；第三年則返回自家從事農事操作。在學校因實習操作之收入，約有百分之八十平均攤付各生。

第三年中，學生每月返校一天，與教師舉行討論，教師亦須定期前往各生農場實施輔導工作，審閱報告，評估其工作績效。

The Experimental Dairy Cow Management Class was conducted in two Provincial Schools: Yuanlin VA&I School and Tainan V-A School. Students were selected on a basis of special criteria rather than through the usual entrance examination procedure. Students followed a three-year curriculum. Loans were made available for each student to purchase two heifers (Yearling heifers NT$ 20,000: loan of NT$ 3,000 from the Government and NT$ 17,000 from the Land Bank with seven year maturity date). All students were housed in dormitories at the schools and the heifers were kept at the schools for student practice.

乳牛經營實驗班由員林農工及臺南農校舉辦，入學學生亦係透過甄選方式而不經由通常之考試，學程爲三年。每一學生可依貸款方式購買兩頭小母牛（一歲大之小牛價值臺幣兩萬元，可依爲期七年之低利貸款，自政府獲貸三千元，土地銀行一萬七千元）。所有學生均須住校以飼養牛隻。

The Experimental Silkworm Mulberry Class was sponsored by only the Provincial Tahu VA&I School. Enrollees were selected from junior high school graduates who came farms having at least 0.5 acre of mulberry trees. The students came from all parts of Taiwan, mainly from the mountainous areas, and were provided scholarships and dormitory facilities. The three-year program included 25-week semesters divided into 13 weeks for in-school studies and 12 weeks for out-of-school practices. An intern system was used to place students on outstanding mulberry and silkworm farms. In addition to the in-school classes, an extension program was conducted with farmers to promote modern practices in silkworm and mulberry production.

蠶業經營實驗班僅由大湖農工職校舉辦，入學學生選自國中畢業生其家庭擁有至少〇•二公頃之桑園者。現有學生來自臺灣各個地區，且多爲山地青年，入學者免繳學雜費，並供應宿舍。三年之學程中，以二十五周爲一學期，其中十三周在校修習，另十二周實施校外實習，一般爲派赴至規模較大之蠶桑農場。該班除對學生施教外，並對從事蠶桑之農民實施輔導工作，以加强其生產。

A special program to promote farm mechanization was conducted by the Provincial Department of Education in cooperation with tthe Provincial Food

Bureau, the Provincial Department of Agriculture and Forestry, and the JCRR. During the 1974-75 school year 17 schools with vocational agriculture programs participated. For the period January 1973-June 1975 the following accomplishments were reported:

1. Three in-service teacher training classes with a total of 74 teachers were conduted by the two agricultural institutes at Chiayi and Pingtung.
2. Farmer training classes for operation and maintenance of
    a. Power tillers: 55 classes and 1439 farmers
    b. Rice harvesting machines: 34 classes and 650 farmers
    c. Rice seedling transplanters: 55 classes and 1439 farmers
    d. Maize-grain seeding machines: 6 classes and 150 farmers

教育廳曾指令若干農校在糧食局，農林廳及農復會之合作與支援下，從事加强農業機械化之計劃。六十三學年度有十七所農校參與此項計劃。自六十二年一月至六十四年六月，完成下列各項作業：

1. 分別由屏東及嘉義兩農專辦理三次農機教師在職訓練，有七十四位教師參加。
2. 對農民之農機操作與修護訓練包括：
    a. 耕耘機：五五班次，一四三九位農民參加。
    b. 水稻收穫機：三四班次，六五〇位農民參加。
    c. 插秧機：五五班次，一四三九位農民參加。
    d. 麥粒播種機：六班次，一五〇位農民參加。

The use of schools for farmer instruction to promote farm mechanization in Taiwan came several years after the initial promotion by the Government. Between 1968 and 1972 thirty-four Farm Mechanization Extension Centers were established. Only one, the one for Taoyuan Hsien Taoyuan Township was established at a school. It was established in April 1972 at the Provincial Taoyuan VA&I School with the Principal as the administrator in charge. The Taoyuan Farm Mechanization Genter had provided instruction to many farmers as shown below:

Tractor maintenance	150 farmers
Rice combine harvester (7 classes)	320 farmers
Rice Transplanter (6 classes)	150 farmers

利用農校之師資與設備對農民實施講習，以推展農業機械化，在本省已行之有年。民國五十七至六十一年間成立三十四個農機推廣中心。其中僅有六十一年四月設於桃園鎮之農機中心，位於桃園農工職校內，並以該校校長爲中心主任。該中心自設立以來，對農民農機之講習計完成：曳引機修護保養，一五〇位農民參加；水稻聯合收穫機（七個班次），三二〇位農民參加；水稻插秧機（六個班次），一五〇位農民參加。

During the three months following the collection of data from the school five tractor maintenance classes were scheduled for April-May 1975 and four rice transplanter classes for the period May-June 1975.

These training programs appeared to be an excellent example of how the schools with their instructors and laboratories should be utilized to help achieve goals for agriculture. Farmers, any age and either with or without machinery, were encouraged to enter the farm mechanization classes. Those who completed the program were eligible to apply for a government subsidy and low interest loan on the purchase of the farm machinery for which they had received training.

另有五個曳引機講習班定於六十四年四至五月舉辦，四個插秧機講習班於同年五至六間實施。

此等對農民之講習，顯示農校在利用其師資與設備以協助農業發展之優異表現。農民不論老幼，亦不考慮其家中有無耕作機械，均鼓勵其參加農機講習班，凡已結業者，均有資格獲得政府低利貸款購置講習過之農機具。

Special programs for guidance of rural youth were sponsored in six provincial schools with vocational agriculture (Tainan, Chiatung, Yuanlin, Huwei, Peikang, and Chisan) and in 14 junior middle schools in five hsiens (Changhua, Yuanlin, Chiayi, Tainan and Pingtung). The kind of projects and activities undertaken were as follows:

1. Conducting demonstration projects at school and at homes. Twenty-five 4-H Club members in each school to conduct the demonstrations under the guidance of teachers and with the schools providing the production materials.
2. Students to provide service to farmers for plowing, planting and harvesting. Schools provided power tillers, power rice transplanters, and power binders and combines. Students secured valuable experience operating equipment; farmers received timely assistance with rice crop; and students earned some money for other projects.
3. Special classes in work of the farm and farm home for junior middle school graduates, age 16-24, who did not enter senior middle schools. Nine classes of boys (approximately 200 total) and one class of girls were trained. Training program of four months included three months at school (lodging provided) and one month for actual practice on a farm.
4. Some agricultural senior vocational schools sponsored training classes

for rural youth in local junior high schools. Most of this work was part of in-school 4-H Club projects.

六所農校（臺南、佳冬、員林、虎尾、北港及旗山）及五縣（彰化、員林、嘉義、臺南及屏東）中之十四所國民中學辦理農村青年輔導計劃，其活動內容包括：

1. 指導在學校及家庭中之示範作業，各校教師指導二十五名四健會會員從事示範作業，並由學校供應器材。
2. 學校供應農機具，由學生協助農民從事各種農事之操作，農家可節省勞力，學生亦可獲取操作農機之經驗及若干報酬。
3. 對年齡十六至廿四歲國中畢業不再升學之農村青年開設講習班。講習每期四個月，包括三個月之在校教學（供應宿舍）及一個月之回鄉實習，業已辦理之班級計男生九班（參加人數約二〇〇人），女生一班。
4. 部分農校並就近輔導就讀國中之農村青年，包括四健會校內作業。

Technical Agriculture Programs

農業技術教育

Technical education in agriculture was provided by two junior colleges of agricultore, also called institutes of agriculture. During the past five-ten years in Taiwan, technical education in the industrial and commercial fields expanded quite rapidly, much more rapidly than in agriculture. During the period 1963 to 1974 the number of junior colleges in industry rose from two to thirty-two; in commerce, from one to twelve; and in agriculture from one to four in 1967 and 1968 but down to two from 1969 through 1974 (4:20). Both of the agricultural institutes were public institutions and the two which started and failed during 1967 and 1968 were private institutions.

農業技術教育由兩所專科學校負責實施。過去五～十年間，工業與商業專科教育之發展遠較農業方面者爲速。民國五十二年至六十三年，工業專科學校由二所增至三十二所；商業專科學校由一所增至十二所；農業專科學校五十六～七年間，由一所增至四所，復於五十八年至六十三年間再減爲兩所。現有之兩所農專均爲公立，五十六與五十七年興起復又取消者均爲私立。

The Institutes. The two agricultural institutes were located in the southern part of Taiwan: one at the northern part of Pingtung Hsien, the southern most Hsien in Taiwan and the other at Chiayi, about halfway between Kaohsiung and Taichung. The two four-year colleges of agriculture were located one at Taichung, near the center of the west side and the other at Taipei at the northern part of Taiwan. The two institutes were both located in excellent farming regions.

專科學校 兩所農業專科學校均位於本省南部，其一位於臺灣最南端之縣份屏東縣之北部，另一位於嘉義縣，約居於臺中、高雄之中途。另兩所四年制之大學農學院，其一位於西部平原中心之臺中，另一則在北部之臺北市。兩所專科學校均位於農業發達之地區。

The Curricula. Fourteen curricula in nine fields of study were available, some at both of the institutes. The curricula were contained in four different programs. The five-year programs were programs in which students enrolled in grade 10 after successfully completing junior midde school annd continued through the equivalent of grade 13 and 14. Five-year programs were offered at both of the institutes. A three-year program, consisting of three years after completion of the senior midde schhool prgram, was available only at Pingtung; but it was available in two form: the regular daytime program and an evening program. The Institute at Chiayi had a two-year evening program in addition to the five-year program. The specific curricula available by kind of program are shown in Table 3, Appendix A.

Agronomy was the only curricular area available at both institutes and available in each of the programs: five-year, three-year regualar and evening, and two-year evening. Food processing and the three animal husbandry and veterinary curricula were also available at both institutes and in several of the programs.

科別 兩所農業專校在九類學科領域中，共有十四種科別，並具有四種不同之制度。五年制招收國民中學畢業生，約當於美國學制之第十年級以迄十四年級。兩所學校均具有此一學制。招收高中畢業生者是爲三年制，僅屏東農專有此制度，並包括日間部及夜間部兩種形式。嘉義農專夜間部則有二年制與五年制兩種，各科學制之科別載於附錄A之表3。

農藝科爲兩所農專及下列各種學制中共同具有者：五年制、三年制日間部及夜間部以及二年制夜間部。食品加工科以及三種畜牧獸醫方面之科別，亦爲兩校共同具有並設置於部分學制中。

The courses in the curricula at the institutes could be divided into general (common) courses; professional and related courses and laboratories/practicals; and elective courses. In general the proportion of credits in each of those areas were:

各科之課程概可分爲普通課程；專業與相關課程及其實習；及選修課程等三類。各類課程學分之比率爲：

General 普通課程	25～36%
Professional and related courses, laboratories/practicals 專業與相關課程及其實習	55～60%
Electives 選修課程	4～20%

The time for the professional and related courses and laboratory/practicals was divided with from 52-65% of the hours spent in lecture/classroom activities and, in one curricula, as few as 35% of the hours spent in laboratory /practicals.

The two institutes had many similarities in their various but some differences were noted. For example, the total credits required for graduation were quite similar in the five-year programs as shown below:

專業及相關課程及其實習之時數，用於講授或其他課堂活動者，約爲百分之五十二至六十五。某一科別分配於實習之時數，僅有百分之三十五。

兩所農專各科之措施，頗多相似之處，玆僅列出若干不同之點，如五年制若干科別規定最低畢業學分數即爲一例：

	Number Credits for Graduation 最低畢業學分數	
	Chiayi 嘉義	*Pingtung* 屏東
Agronomy 農藝	240	244
Animal Husbandry 畜牧	233	248
Veterinary Medicine 獸醫	263	267

The credits at both institutions were divided among three groups of courses: general (common) courses, professional and related courses, and elective or optional courses. In general, the common courses constituted from 25 to 36 percent of the total credits in the five-year curricula. The Chiayi Institute required a smaller number of the total credits (66 credits) than did the Pingtung Institute (89 credits) in common courses. Also, the Chiayi Institute offered elective courses within the curricula, whereas the Pingtung Institute offered optional courses which were available but not required for graduation.

課程類別之區分已如上述。五年制普通課程約爲總學分數百分之二十五至三十六。嘉義農專普通課程定爲六十六學分，較屏東農專之八十九學分爲少。又，在選修課程方面，嘉義農專列在課程標準之內，但屏東農專則列在規定畢業學分之外。

A simple comparison was made of the courses in the agronomy curricula at the two institutes for the different programs in order to answer three questions:

1. What are the similarities and differences among two-year, three-year and five-year programs?
2. What are the similarities and differences between the regular and evening programs?
3. What are the similarities and differences between the institutes?

The two-year, three-year, and five-year programs of agronomy were quite simiar in the proportions of the credits required in the professional and related courses and laboratory/practice. The five-year programs had a higher proportion of the credits in the general course areas while the two and three-year programs hae more credits in electives. (See Table 4, Appendix A).

The regular and evening programs had nearly identical curricula. The regular program had more flexibility in the number of credits in the two areas of electives and in the professional and related courses.

對兩所農專農藝科之課程曾予比較，以求解答下列三問題：

1. 二年制，三年制及五年制異同之處爲何?
2. 日間部與夜間部異同之處爲何?
3. 兩所農專異同之處爲何?

農藝科各種制別在專業與相關課程及實習必修學分之比率上甚爲相似。五年制普通課程學分之比率偏高，二年與三年制則具有較多之選修學分。（見附錄A，表4）

日間部與夜間部之課程標準幾完全相同。日間部則在選修科目，及專業與相關學科之學分數較具彈性而矣。

The programs at the two institutes were alike than they were different. Chiayi offered the 5-year regular and the 2-year evening curricula in agronomy; and Pingtung offered the 5-year and 3-year regular and 3-year evening curricula in agronomy. The Pingtung Institute required more credits in languages (Chinese and English), mathematics, physics and chemistry. The Chiayi Institute required more credits in the technical agriculture courses. On these two points the Pingtung Institute's 5-year agronomy curricula was more academic oriented, more like a baccalaureate degree curriculum; and the Chiayi Institute's curriculum was more technical oriented.

Three of the fourteen curricula had more than forty percent of the 4326 students. The four agronomy programs enrolled 718 students; the four veterinary programs enrolled 597 students; and the four food processing programs enrolled 558 students, as shown by data in Figure 2.

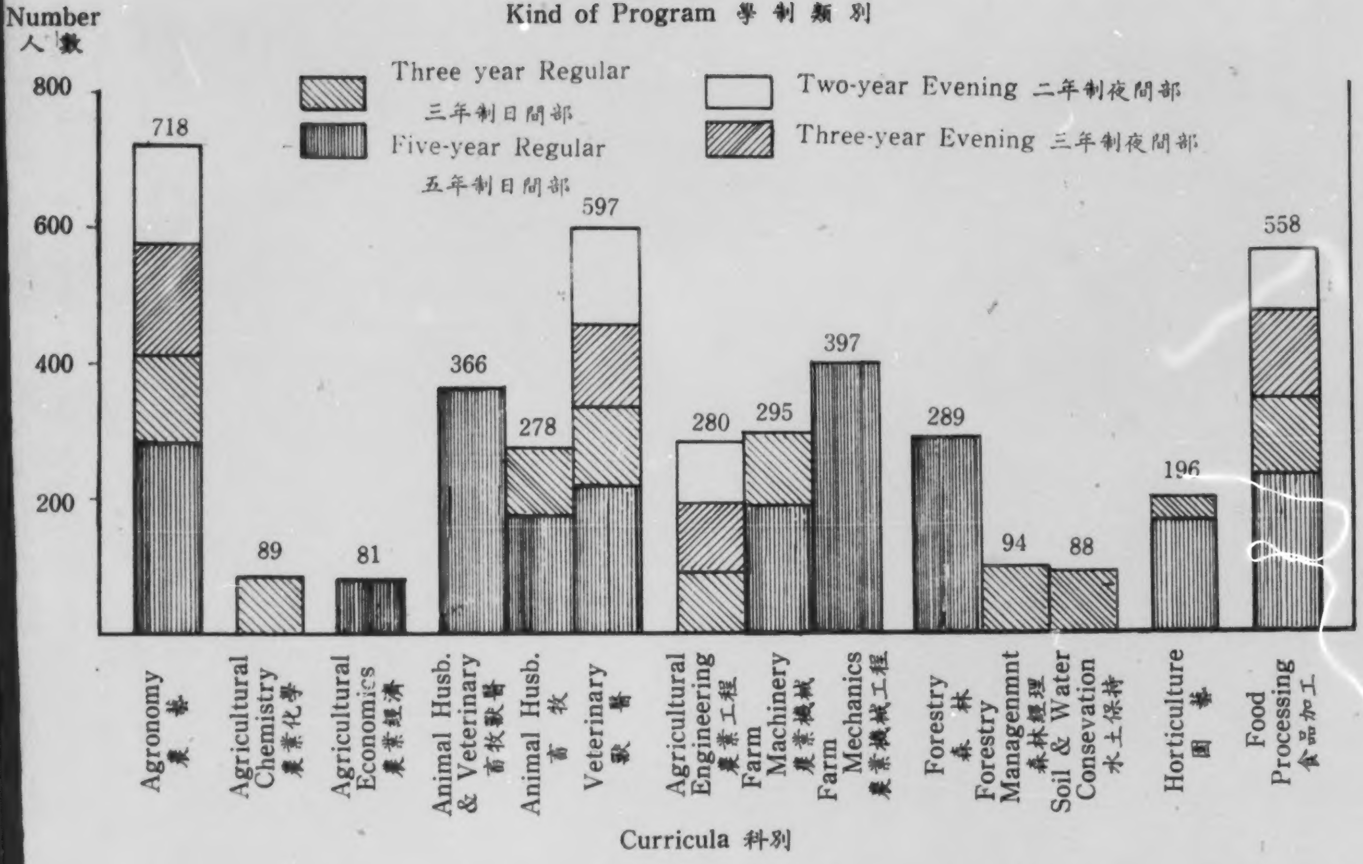


Figure 2. Enrollment by Curriculum and Kind of Program in Taiwan Agricultural Institutes, 1974-75.

圖 2. 農業專科學校六十三學年度不同制科就學人數

The majority of the students enrolled were male: 3702 male students and 624 female students. In all except two curricula the male students greatly outnumbered the female students. In horticulture there were 113 female students and 83 male students. In food proccessing there were 395 male students and 163 female students, a ratio of approximately 2.5 to 1. The proportion of female enrollment in the evening programs showed a slightly larger proportion, but still a minority, enrollment of females as shown in Figure 3.

兩所農專所實施之體制，相同之處多於相異之處。農藝科嘉義農專有五年制日間部及二年制夜間部；屏東農專則有五年制及三年制日間部及三年制夜間部。屏專對語文學科（國文及英文）、數學、物理及化學規定之學分較多，嘉專則在農業技術性學科打定較多之學分。就此兩點視之，屏東農專五年制農藝科課程之安排較偏向於學院式；嘉義農專則偏向於技術性課程。

在四三二六名學生中，百分之四十以上就讀於十四種科別中之三種。四種類別之農藝科共有七一八名學生。四種類別之獸醫科有五九七名學生；四種類別之食品加工科有學生五五八名。如圖 2 所示。

以性別計，男生多於女生，各爲三七〇二名及六二四名。除兩種科別外，男生數均遠多於女生數。園藝科女生有一一三名，男生有八三名。食品加工科男生三九五名，女生一六三名，其比率約爲二・五對一。就讀於夜間部女生人數比率較高，但仍少於男生。女生就讀人數見圖 3 。

The Students. There were approximately 4,300 students, regular and evening, enrolled in the two technical institutes in agriculture. Information about the background of the students was available from the institute records for the students enrolled in the regular five-year and threeyear programs. No background information was available regarding the evening students. More than half of the regular students came from rural residences but only about one-third came from farms. About 40-45 percent of the students in the five-year programs came from farms but only 24 percent of the students in the three-year programs came from farms as shown in Figure 4. Perhaps that difference was due to the different procedures for enrolling the five-year and three-year students.

The five-year agricultural programs received students through a combined examination for all public and private five-year programs (industrial, commercial, agricultural and others) in south Taiwan. The students from farms, either in the rural or city areas, probably had less competition for the spaces in the five-year agricultural programs than for the spaces in the three-year

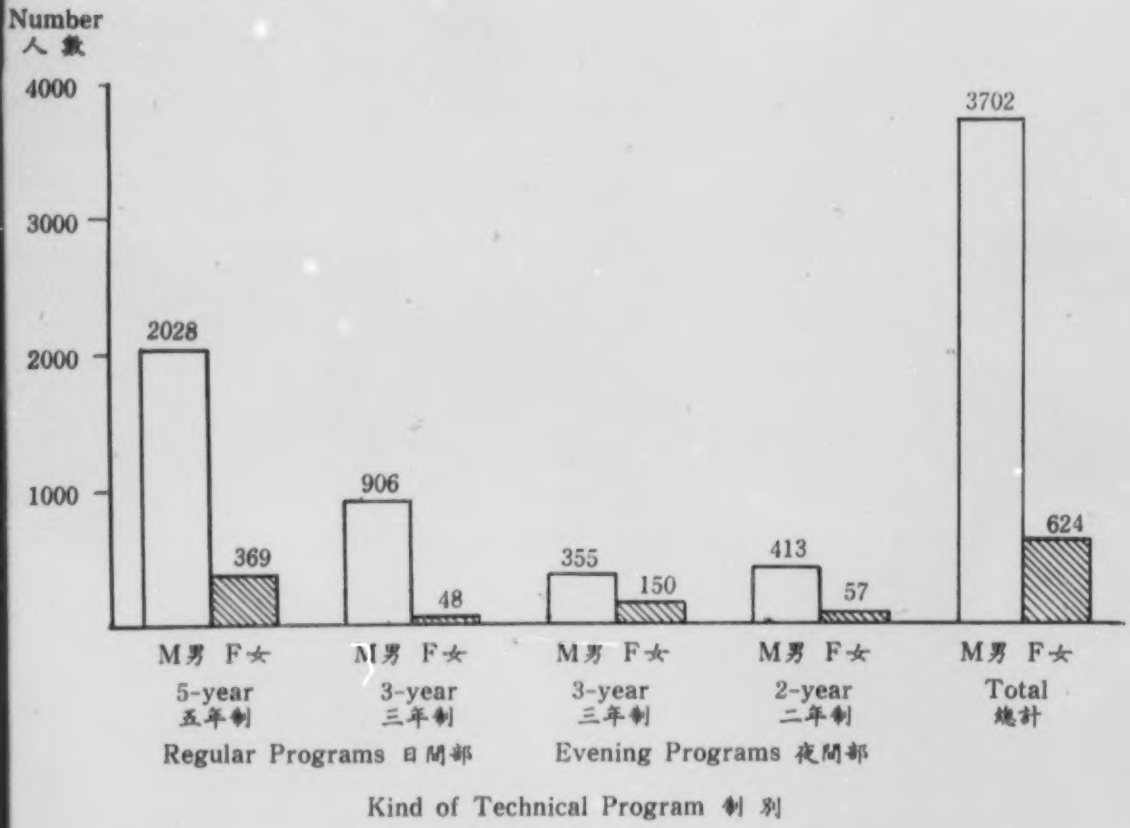


Figure 3. Number Male and Female Students Enrolled by Kind of Technical Agriculture Program, 1974-75.

圖 3. 農業專科學校六十三學年度各種制別男女生就學人數

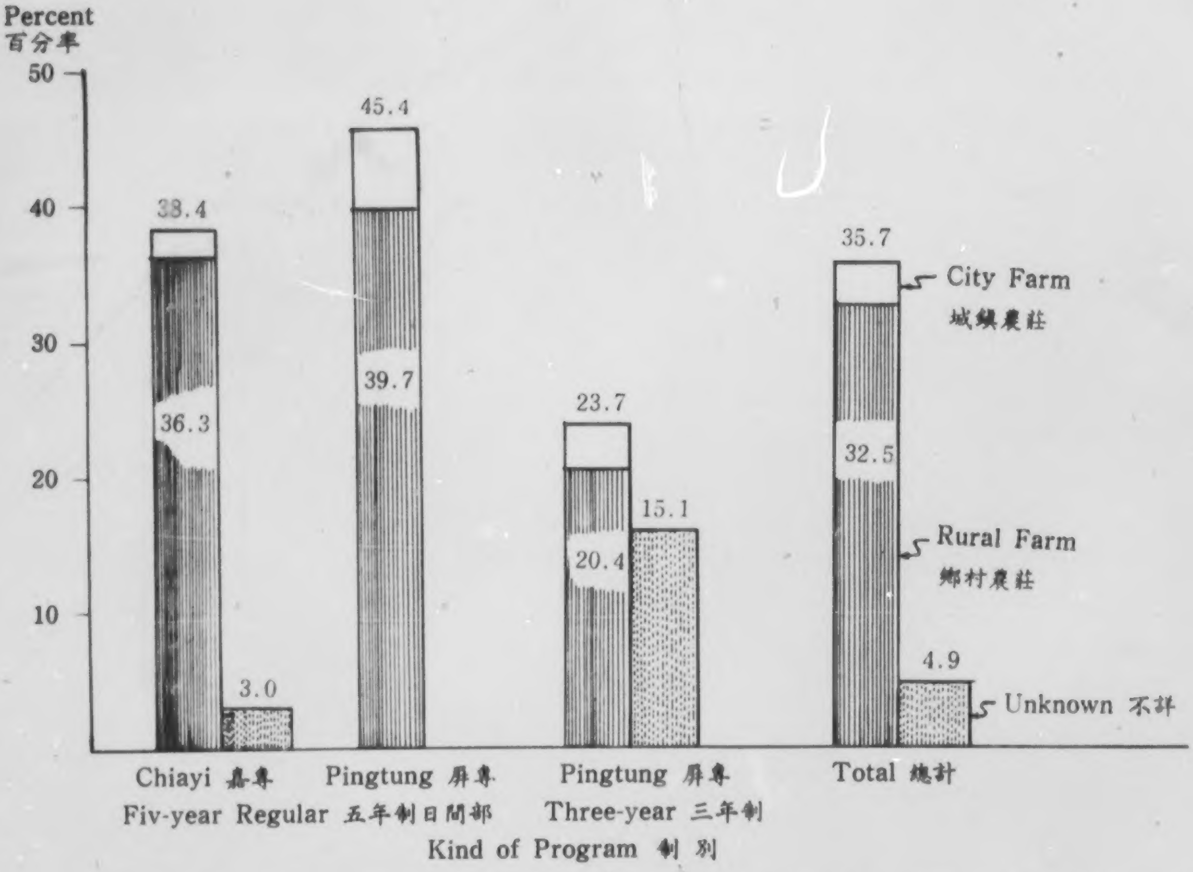


Figure 4. Students in 1974-75 With Farm Residence When They Enrolled in Taiwan Agricultural Institutes.

圖 4. 農業專科學校六十三學年度家居農莊學生

agricultural programs. This was due, in part, to the higher preference for taking the regular three-year senior middle school program before attempting to enter a college.

學生 兩所農專包括日間部及夜間部共有學生四、三〇〇名，兩校日間部五年制及三年制學生之資料曾予蒐集，但無夜間部者。半數以上日間部學生均居住於鄉區，但僅有三分之一來自農家。五年制學生來自農家者約有百分之四十～四十五。三年制學生來自農家者僅有百分之二十四。如圖 4 所示。此種差異或由於不同之學制所致。

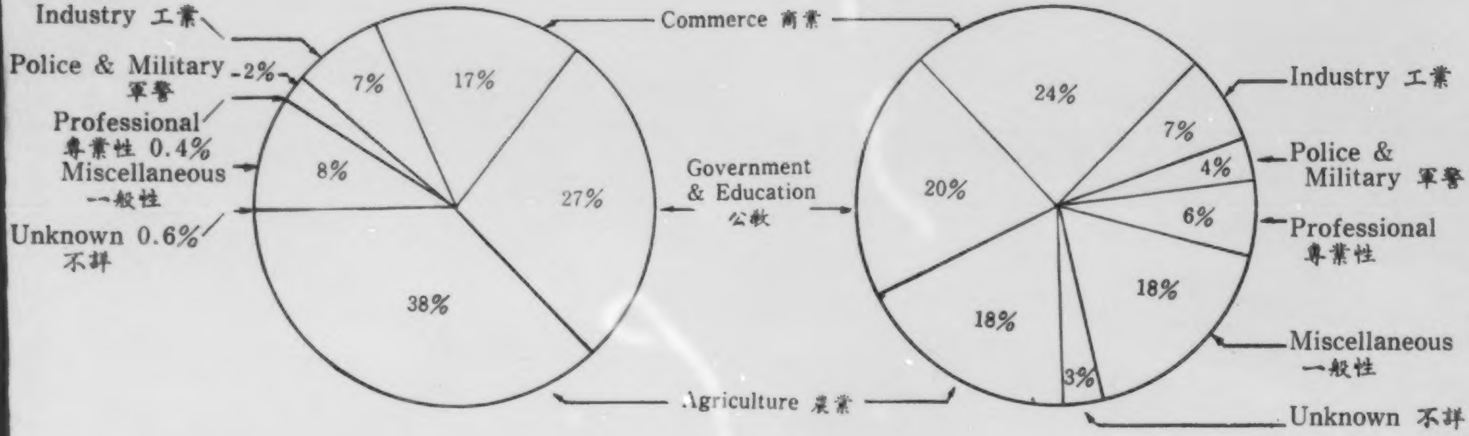
農科五年制學生之入學，係透過南部地區公私立學校五年制聯合招生（包括工業、商業、農業及其他）。農家子弟，不論其來自農村或城區，在五年制農專之考試上，其競爭性較小於三年制者。其中部分原因當歸諸高中畢業生報考大專之强烈意趣。

The three-year curricula at Provincial Pingtung Junior College of Agriculture was one year longer than most junior college curricula, and one year shorter than a bachelor degree program. During the summer of 1974 there were 30,208 students (57% boys and 43% girls) who applied to take the examination for entrance into all of the three-year junior colleges in Taiwan. The largest number applied for the Law and Commerce Curricula, 15,306 students. Only 24 percent of the applicants passed the entrance examinations. Five hundred students were accepted into the ten 3-year agricultural curricula at Pingtung but only approximately one-half actually enrolled (15:39 & 43). There was explicit concern by administrators, faculty and students for the three-year curricula with considerable pressure to expand it into a regular four-year degree program.

The occupations of the parents of students enrolled in the three-year and five-year programs were mainly agriculture, commerce, and government and education as shown in Figure 5. When comparing the occupation of parents of students in the five-year program with those in the three-year program, the two major differences were:

1. More than twice as large percentage of parents of students in the five-year program were engaged in agriculture; and
2. Six percent of the parents in the three-year program were engaged in the professions compared with only 0.4 percent of the students in the five year program.

屏東農專三年制較一般專科學校之學程多一年，但較授予學位之大學少一年。民國六十三年夏有三〇、二〇八人（百分之五十七男生，百分之四十三女生）報考所有三年制學校，以投考法商各科者最多，有一五、三〇六名學生。該次入學考試錄取率僅爲百分之二十四。屏東農專三年制十種科別共錄取五百名，但僅有半數註冊入學。校方師生



Five-year Programs 五年制

Three-year Programs 三年制

Pigure 5. Occupations of Parents of Students Enrolled in Five-year and Three-year Programs in Taiwan Agricultural Institutes. 1974-75.

圖 5. 農業專科學校六十三學年度五年制及三年制學生家長職業別

]]>

對此咸表關切，而一致要求將三年制改爲大學四年制。

三年制及五年制學生之家長之職業多從事農業、商業及服務公敎機關，見圖5。比較三年制與五年制學生家長之職業，有下列兩點主要之差別：

1. 五年制學生家長從事農業者之百分率多出兩倍有奇。
2. 三年制學生家長職業有百分之六爲專業性者，而五年制者僅有百分之〇・四。

The Teachers. The faculty at the two institutes consisted of 312 persons, most of whom had relativaly high educational qualifications. There were nine faculty who had earned doctorates; 41 had masters degrees; 149 had bachelors degrees; and 113 had less than a bachelors degree as shown in Figure 6. In addition, most were experienced teachers at the college level, as also shown in Figure 6. About 28 percent had 10 or more years of experience, approrximately 37 percent had five year or less, and about 9 percent had only one year of experience. The government policies related to teacher qualifications gave the minimum educational requirements for teaching in an institute (junior college) as a bachelor's degree in the major area for which instruction is to be offered. There are no requirements that instructors in technical institutes have successful experience in the kind of occupations for which the students were being prepared.

There were no specific provisions for employing as teachers persons who had experience in industry but did not have the minimum formal educational requirements. In other words, persons with outstanding occupational competencies in the areas for which students were being prepared, could not be used as regular instructors in the technical agriculture programs if they lacked the formal education credentials.

敎師　兩所農專共有三一二位敎師。多數均有良好之學歷。其中有九位具有博士學位；四十一位有碩士學位；一百四十九位有學士學位；低於學士學位者有一百一十三位。如圖6所示。此外，多數均係有經驗之大專水準之敎師。亦見圖6。具有十年或十年以上敎學經驗者，約有百分之二十八；百分之三十七具有一年以上五年以下之敎學經驗。敎學僅達一年者約百分之九。政府之政策爲專科學校敎師擔任本科系敎學者，至少應具有學士學位。對訓練學生就業之專業技術之任課敎師無資格限定。

對具有實際經驗但不具最低任敎資格者，使能擔任敎師，尚無明文規定。亦即某些人士雖有優異之技術經驗，堪能勝任對學生就該行業施敎者，但因缺少學歷證件，亦不能受聘爲敎師。

The Instructional Facilities. The institutes need laboratories and land, plants and animals, and tools and equipment for students to use in the many

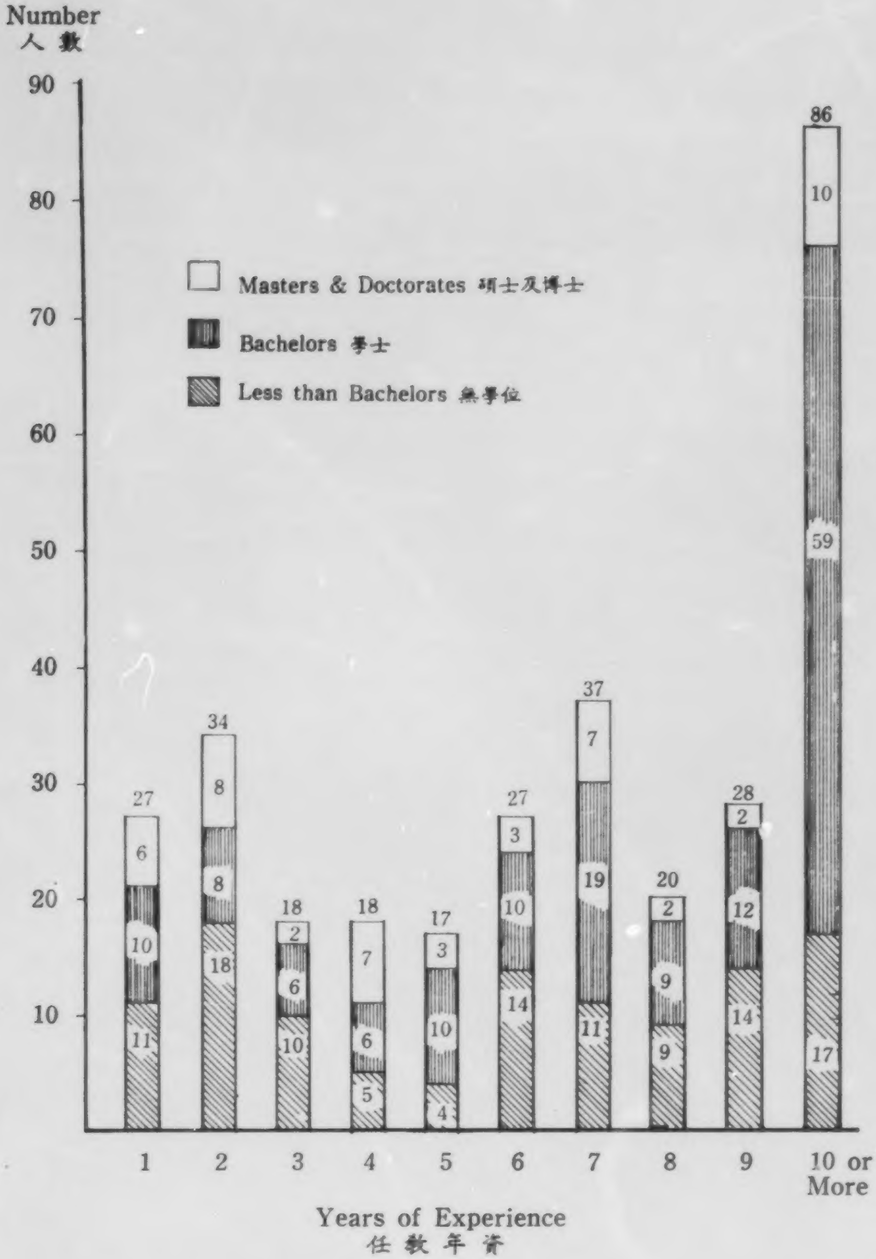


Figure 6. Number of Instructors in Taiwan Institutes of Agriculture by Years of Experience and Level of Education. 1974-75.

圖 6. 農業專科學校六十三學年度教師學歷及任教年資

different curricula. In addition some facilities are needed for demonstrations and research to help the faculty continue to learn. However, the institutes should have close working relationships with the industries for which the students are being prepared. Through that close working relationship the institutes should be able to arrange for some kinds of cooperative educational programs whereby the students are placed in the industries for some of their training. Information was collected about the instructional facilities at the institutes.

The *land* at the two institutes consisted of approximately 26.6 hectares at Pingtung and 41.6 hectares at Chiayi. The broad categories of use of the land was as follows:

敎學設備　兩所農專均需要實驗室、土地、禽畜、作物以及各種設備以供各科敎學及學生之實習。對敎師進修研究用之設備亦待增添。此外，農專應加强與訓練學生從業有關之企業機構之連繫，透過此種聯繫進一步實施各項建敎合作計劃。對兩校之敎學設施，曾獲若干資料。

屏東農專擁有之土地面積約爲二六・六公頃，嘉義農專則有四一・六公頃。其使用情形如下：

Land Use 土地之使用	*Number of Hectares* 公頃數	
	Chiayi 嘉義	*Pingtung* 屏東
Campus, athletic field & non-farm uses 校園、運動場及非農業性之使用	11.2	19.7
Paddy 稻田	10.2	2.0
Dryland crops 旱作田	5.3	2.9
Orchard 果園	7.0	0.3
Fish pond 魚池	0.4	—
Livestock 畜牧場	7.0	1.7
Other 其他	0.5	—
	41.6	26.6

In addition, the Pingtung Institute had 291.2 hectares of forest land and the Chiayi Institute had 190.3 hectares of forest land.

Both Chiayi and Pingtung had relatively new and modern *laboratories* for swine, dairy and poultry. The livestock and poultry on hand at the time of the visits to the institutes were as follows:

屏東及嘉義兩所農專尚擁有林地，前者有二九一・二公頃，後者有一九〇・三公頃。

兩所農專均有相當完美之畜牧實驗設備，訪問之當時，兩校禽畜飼養情形如下：

	Numbers 頭數	
Kind 類別	*Chiayi* 嘉義	*Pingtung* 屏東
Dairy cattle 乳牛	78	80
Water Buffalo 水牛	2	1
Sheep 羊	5	—
Swing 豬		
Sows 母豬	59	16
Boars 公豬	—	2
Meat animals 肉用豬	94	75
Pigs 小豬	160	30
Chickens 雞	274	204
Geese 鵝	5	—
Rabbits 兔	6	—

The *machinery, tractors* and *equipment* for instruction in agricultural power, equipment and materials was relatively new and well maintained at both institutes. The Pingtung Institute had more extensive and modern facilities than the Chiayi Institute due to a previous development-education contract with West Germany for several years and because the Chiayi Institute had more recently been up-graded from a senior vocational agriculture school. The major equipment at each institute was as follows:

兩所農專在農業機械方面之各項設備，相當新穎。保養工作亦稱良好。由於屏東農專過去曾與西德在農機方面從事建教合作，以及嘉義農專乃由職校升格爲時不久，故前者在此一方面之設備較後者爲優。兩校農機設備情況如下：

	Numbers 數量	
Item 項目	*Chiayi* 嘉義	*Pingtung* 屏東
Tractors 曳引機	5	9
Power Tillers 耕耘機	6	15
Rice Seedling Transplanters 插秧機	11	4
Rice Binders 水稻捆紮機	2	5
Rice Threshers 脫穀機	4	—
Rice Combines 水稻聯合收穫機	6	4
Spray Equipment 噴洒設備	2	4
Electric Welders 電焊機	3	2
Gas Welders 氣焊機	3	2
Rice Hulling Machine 碾米機	—	1
Grain Dryer 穀粒乾燥機	—	3

Food processing has expanded rapidly in Taiwan during the past twenty years. Both of the institutes had food processing curricula and both reported on the kind and condition of equipment as follows:

本省食品加工業過去二十年來發展甚速。兩所農專均有食品加工科，有關之設備及情況如下：

	Chiayi 嘉義		*Pingtung* 屏東	
Kind of equipment 設備種類	*Have* 有無	*Condition* 情況	*Have* 有無	*Condition* 情況
Canning 製罐	Yes 有	Satisfactory 良好	Yes 有	Unsatisfactory 不良
Dehydration 脫水	No 無	—	Yes 有	Satisfactory 良好
Fermentation 發酵	Yes 有	Satisfactory 良好	Yes 有	Satisfactory 良好
Freezing 冷凍	Yes 有	Satisfactory 良好	Yes 有	Satisfactory 良好

The old but satisfactory canning equipment at Chiayi and the unsatisfactory equipment at Pingtung reflects a major weakness in the equipment for the food processing curricula. Equally as important, or perhaps more important, was the absence of adequate, modern equipment for the teaching of various analyses and tests to be performed for quality control.

食品加工科之製罐設備情況不良，顯示該科之主要設備有待充實。有關品質管制之分析測定較新型之設備亦待充實。

Both of the institutes had *dormitories* for faculty and students. The faculty facilities for 123 families at Pingtung were rated as 57 percent excellent, 24 percent good, and 19 percent poor. The faculty facilities for 82 families at Chiayi were rated at 85 percent excellent, 15 percent good, and none rated poor.

New student dormitories had recently been completed at both Chiayi and Pingtung. Chiayi had one new dormitory with capacity for 500 boys and old dormitories for 100 boys and 120 girls, a total of nearly 3,600 square feet of space; and Pingtung had capacity for 570 boys and 30 girls, a total of about 3,400 square feet of space. Both institutes still had to use some poor facilities for student dormitories in addition to the new facilities.

The classrooms at Pingtung numbered nearly 100 with capacity for about 1650 students. All but four of the classrooms were in relatively new facilities.

Those four were in old, inadequate buildings. At Chiayi there were 46 classrooms were adequate but many were in old wooden, inadequate buildings.

The space for housing the Administrative offices, personnel and equipment was reported to be "sufficient" at both Chiayi and Pingtung. The condition of the space was mainly "excellent" at Pingtung; but at Chiayi the buildings were much older and were rated "poor" to "good"

兩所農專均備有敎師與學生之宿舍。屏東農專一二三戶敎職員宿舍中，有百分之五十七情況良好，百分之二十四尚可，百分之十七情況不良。嘉義農專八十二戶敎職員宿舍中，有百分之八十五情況良好，百分之十五尚可，無情況不良者。

最近兩校均曾興建學生宿舍，嘉義農專新建之男生宿舍可容納五百人，舊有宿舍可容納一百名男生及一百二十名女生，其總面積約爲三六〇〇平方英尺；屏東農專方面，學生宿舍可容納五七〇名男生及三〇名女生，總面積約爲三四〇〇平方英尺。兩校之部分舊有宿舍尚需繼續使用。

屏東農專約近百間之敎室，容納約一六五〇名學生。其中僅有四間敎室雖其內部設備尚稱新穎，但仍位於情況不良之房舍中。嘉義農專有四十六間敎室以容納二三〇〇名學生。部分敎室情況良好，但仍有多數位於老舊之房舍中。

辦公廳舍及其內部設施，兩校均尚敷用。一般房舍情況，屏東農專比較良好。

III. STRENGTHS AND WEAKNESSES OF PRESENT PROGRAM

現階段技職教育之檢討

Introduction

緒　言

Programs of vocational and technical education must have a strong, positive relationship to the needs of society for qualified skilled and technical workers. In addition, the programs must be designed and conducted in such a way as to provide the opportunities for individuals to prepare for, to enter and to advance in their chosen career areas. The programs of vocational and technical education in agriculture have been reviewed first, in terms of their objectives and their graduates; then in terms of the schools, curricula, students, faculty and facilities.

技術及職業教育應對需要優良技術人員之社會保持良好關係。本身亦應對準備從業人士，在給予良好之訓練上，作妥善之安排與指導。乃就農業職業及技術教育先檢討其目標，畢業生；次及於學校，科別，學生，教師以及教學設備。

The review of the present programs for determination of strengths and weaknesses was accomplished with a basic assumption underlying the review: vocational outcomes experienced by individuals is an interaction product of *school*, *student* and *occupational opportunity* variables. All three variables are important. The school variable includes such factors as curriculum, courses, instructional methods, facilities, teachers, guidance, administration and others. The student variable includes such factors as general intelligence, aptitudes, interests, subject performance, social adjustment, personal characteristics and others. The occupational opportunity variable includes such factors as local, regional and national manpower requirments for occupations. In other words, the comprehensive review of the several factors has been done within the context of an assumption about "cause-effect" or "input-output" relationships.

檢討現階段技職教育之得失，係基於以下之設定：個人之就業乃是學校，學生及職業機會三種變數交互作用以成。三種變數均甚重要。學校變數包括科別、課程，教學方法，設備，教師，輔導，校政等因素。學生變數包括才智，能力，興趣，學業，社會調適，性向等因素。職業機會變數包括地方性及全國性在職業上之人力需求。此項綜合檢討乃就若干項因素本"因果"或"投入-產出"關係而行之。

The Objectives

目　標

The goals or objectives of the vocational and technical education programs were presented in Chapter I. They have been reviewed here without complete restatement.

The broad goals for senior-level vocational education in agriculture and institute-level technical education in agriculture were found to be appropriate. The recent plans for economic development of the Republic of China called for changes and strengthening in various agricultural areas. The broad objectives for the vocational and technical education programs in agriculture were consistent with those plans. However, the more specific goals for some of the curricula in the vocational agriculture programs appeared to be less appropriate. And there was an absence of more specific goals for the curricular areas in the technical agriculture programs.

農業技術及職業教育目標已見於第一章，茲對其作一檢討。

高中階段之農業職業教育及專科階段之技術教育，其廣泛之目標洵屬正確。近年來爲經濟發展所訂定之計畫，在農業方面之各個領域亦要求予以改進及加强。農業職業及技術教育既定之目標與此等計畫均能配合，但農職教育中若干專業科之教學目標對計畫之配合仍有欠缺。農業技術教育各專業科之教學目標尚待訂定。

The more specific goals for the curricula of farm management and sericulture appeared to be very appropriate for the present-day conditions in agriculture. The accelerating rate of change in agricultural technology, the proposed development of specialized areas of agricultural production and other factors all pointed toward the need for vocational education in production agriculture for prospective and present farmers, and for those who are to be employed in basic agriculture worker positions at the village and hsien levels.

農場經營科及蠶桑科之教學目標對現階段之農業至爲適當。農業技藝之加速改變及擬議中各專業性農業生產之開發，連同其他若干因素，均指出農職教育對在職及未來農民在農業生產上，以及行將任職於縣級及鄉鎮級農業從業人員之需要性。

The goals for the curricula in farm machinery, agricultural civil engineering, food processing, animal husbandry and veterinary science, and forestry had some basic weaknesses. The weaknesses were due mainly to the age-education level for the students, the job technology requirements, and the number of job openings. In general, the jobs require a level of specialization which is inappropriate at the senior middle school level. It is more appropriate at the technical institute level. On the other hand, the objectives for vocational program to prepare present and prospective farmers should include objectives related to plants, soil, animals and management. Those objective should be stated so that instruction will be focused on the production and marketing practices for farmers in the enterprises commonly found on farms. And the objectives should include the farm as a unit.

農業機械，農業土木，食品加工，畜牧獸醫及森林等科之教學目標均有若干基本上之弱點。此等弱點主要在學生之年齡～施教水準，對就業技術之要求以及所就職業類別之安排等。概括言，就業目標不適合高中階段而較適合專科階段之教育。此外，職業教育在訓練在職農民及未來農民者，應涉及動植物，土壤及管理等方面之教學。此等目標應使教學能針對農民在生產與運銷之實際運作之方式陳述之。並將農場之經營視作一整體。

The goals for the curriculum in home economics should be less restrictive. The kinds of jobs for which preparation is to be given should be more explicit. For example, the positions for women in Farmer Associations, local government, and private industry which require competencies in agricultural and home economics fields, should be more clearly identified. At the same time there should be opportunities for the girls to prepare for the many jobs in agriculture which women now and in the future should enter.

農村家事科之教學目標不應偏于狹隘。就業類別應予明確說明。譬如女性從業人員在農會，地方政府及私人企業機構等需要農業及家事方面之學驗應有較明確之認定。同時，對未來婦女在農業界中將可從事之多種工作，應作先驅之訓練。

The absence of specific goals for the various curricular areas in the technical agriculture programs made it difficult for instructors to design appropriate courses, develop materials for counseling students, and to measure the effectiveness of the programs. One of the results from this situation was the strong tendency for the technical agriculture curricula to be very similar to the curricula in the baccalaureate degree programs in agriculture. Another result was the lack of focus on the occupational requirements for persons to enter and progress in the agricultural technician positions.

Comments from teachers and administrators about the objectives emphasized the need to make the objectives more specific for the preparation of farmers, basic agricultural service workers, and agricultural technicians. The following three quotations are illustrative of some of the comments received:

> "We must place emphasis on the training of practical techniques in order to prepare the present and future farmers for modern agriculture."
>
> "We hope those who study agriculture will engage in agriculture; those who receive vocational or technical education in agriculture should devote themselves to agriculture. After graduation the former students may improve the techniques of agricultural production and processing for the purposes of increasing the agricultural society."
>
> "Increasing production and improving the quality of products in agriculture are not sufficient. We must add the concept of profit: the objectives of the programs should be the increasing of production, improving the quality of products and increasing the profits in agriculture."

由於農業技術教育各科明確之教學目標尚付闕如，致使教師在課程之設計，資料之安排以及教學效果之評量等均感困難。此種情況導致後果之一爲農業技術教育步趨大學農學院者。另一後果爲對進入農業技術界服務者無計畫目標。

有關教學目標，來自各校主管人士及教師之意見，均表示對訓練未來農民，農業基層人員及農業技術人員應再求其專精化。以下各點爲其意見之一斑:

> 「對在職及未來農民之訓練應着重實用技術以適應現代農業。」
>
> 「習農者均應從事農業工作; 改進農業生產與加工技術以强化農村社會。」
>
> 「農產品產量之增加及品質之改善，不應即視爲滿意，尙應導入經營以盈利之觀念。」

The Graduates

畢 業 生

There have been many graduates from the vocational agriculture programs in Taiwan and a relatively small number of graduates from technical agriculture programs. It has been estimated that between 1950 and 1974 more than 84,000 persons graduated from the senior and five-year vocational agriculture programs; about 6,000 from the technical agriculture programs; and about

14,000 from the baccalaureate programs in agriculture. The number of graduates from each of the three levels of agricultural education for five selected years is shown in Figure 7. The graduates from the vocational agriculture programs have dominated the picture but since 1970 their numbers have declined. By 1974 the number of agricultural graduates from the technical institutes was slightly more than the number of baccalaureate graduates. It appears that the number of agricultural graduates from technical institutes is still too few to fill the demands in the moderizing agriculture of Taiwan.

過去自農業職業學校畢業之學生甚多。自農專畢業之學生較少。民國三十九年至六十三年農校高級部及五年制畢業之學生約有八四、〇〇〇名；畢業於農專者約有六、〇〇〇名；自大學農學院畢業者約一四、〇〇〇名。此三個農業教育階段五個間斷年度畢業之學生人數如圖7。顯示農校畢業學生在人數上之優勢。但自五十九年以後即告下降，六十三年之資料顯示農專畢業生人數已略多於大學農學院者，但不能滿足現階段農業上之需求。

The number of graudates in some curricula appears to be out-balance with the demands in those areas. For example, there has been a dramatic increase in the number of farm products processing plants in Taiwan during the past 15 years. The colleges did not produce graduates in that curriculum until the early 1960's and the technical institutes produceed some graduates after the mid-sixties. A large increase in the number of graduates from the Farm Products curriculum in the senior vocational agriculture schools occurred in the late sixties and into the seventies. Figure 8 shows there were 546 V-A school graduates in 1970 and 900 in 1974, compared with 48 and 176 technical institute graduates and 49 and 89 college graduates in similar curricula for the same two years. Probably, there were too many vocational agriculture graduates from the Farm Products curriculum and about the correct number from the technical institutes and colleges in 1974.

某些科别畢業生之人數與該領域所需求之人數未達平衡。譬如過去十五年來本省農產品加工工廠增加極爲迅速。農學院及農業專科學校，在農產製造方面造就之畢業生人數及起步年期未能配合，高農農製科自五十年代末期迄至六十年代畢業學生人數大量增加。圖8顯示農產製造方面民國五十九年有五四六名，六十三年九〇〇名畢業生。同年期農專畢業生各有四十八名及一七六名；農學院畢業者各有四十九名及八十九名，就該學科各等級畢業學生人數論，農校似嫌偏多，專科及大學則屬恰當。

Figure 8 also contains data about the number of graduates from the crops and soil scienece curricula. The number of graduates from the vocation-

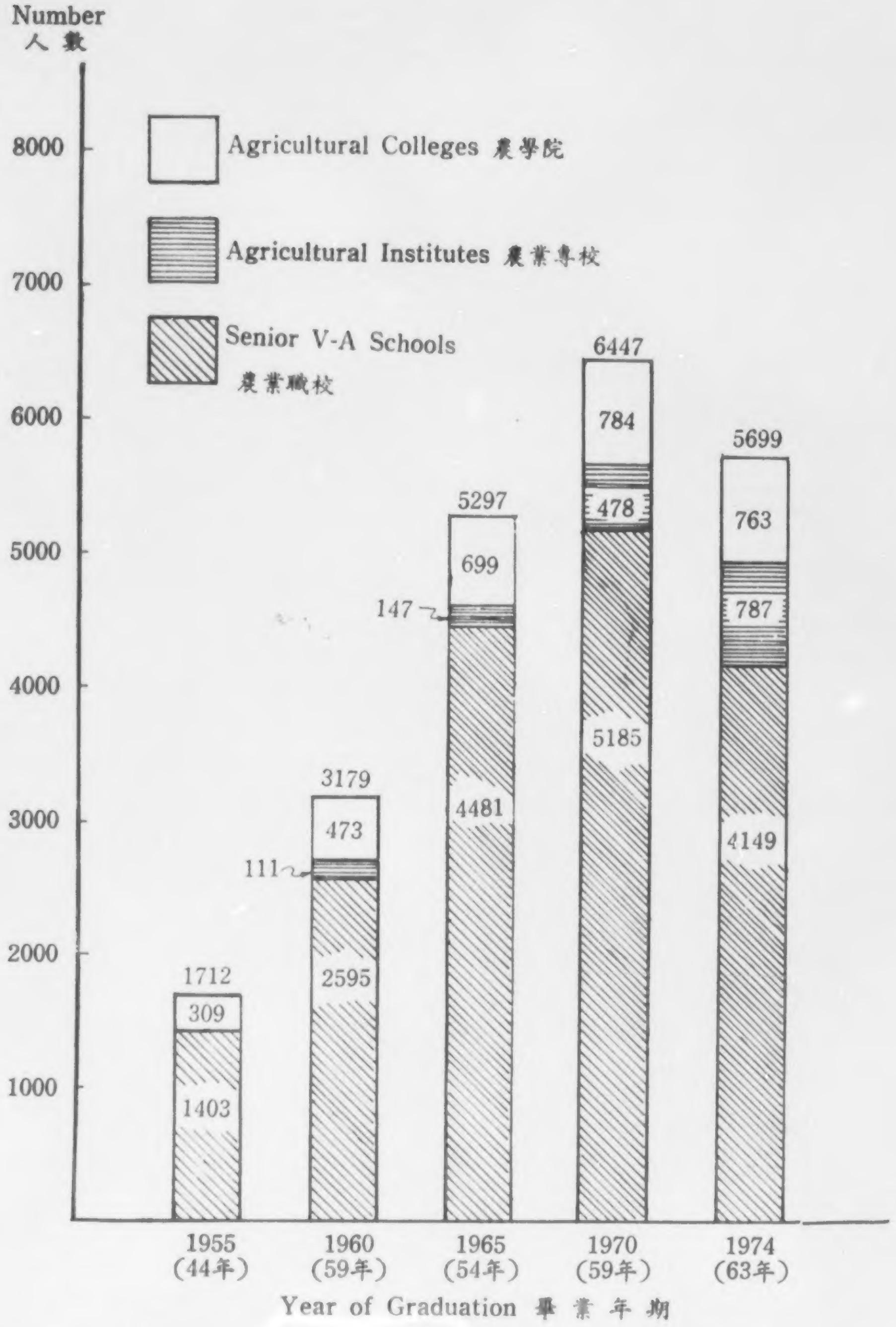


Figure 7. Number of Taiwan Graduates from Agricultural Curricula by Level of School and Year of Graduation.

圖 7. 各級農業院校不同年期畢業生人數

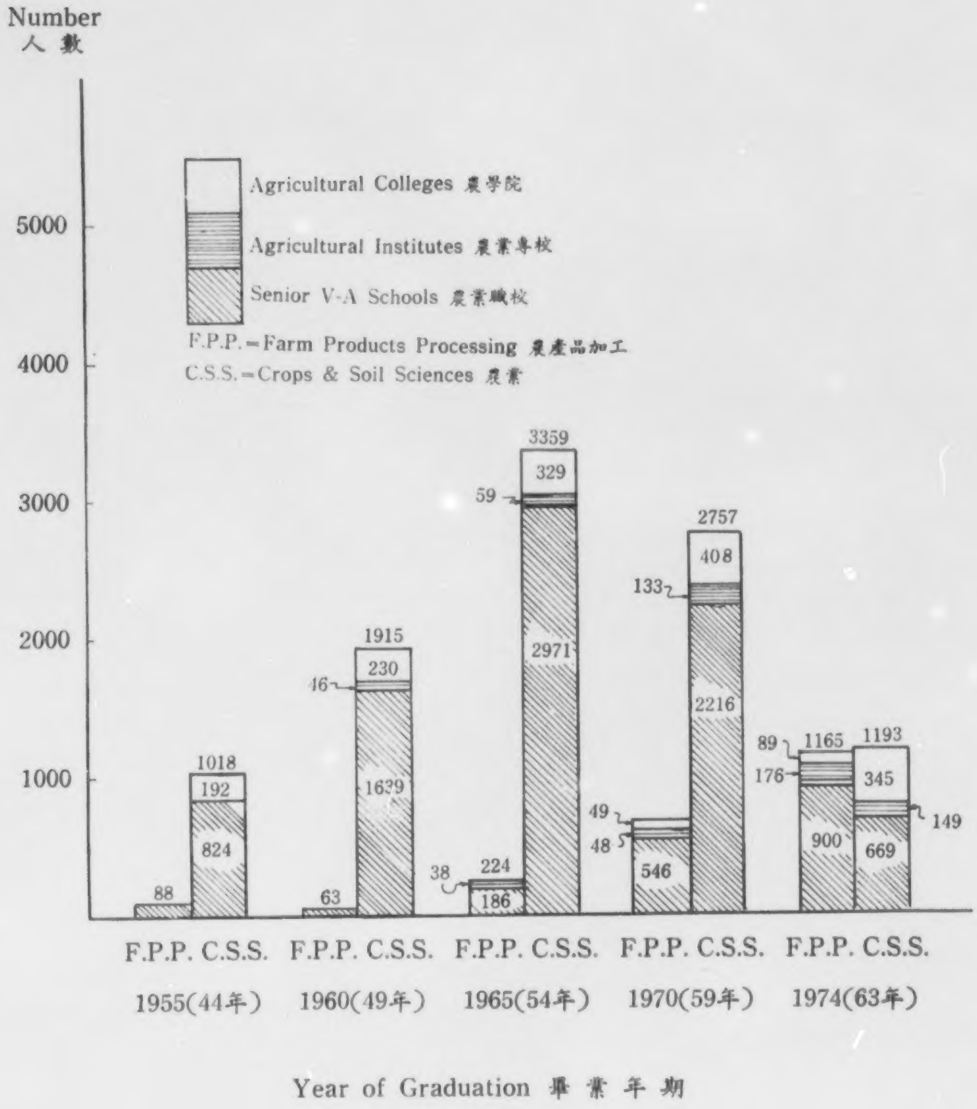


Figure 8. Number of Taiwan Graduates from Farm Products Processing and Crops and Soil Sciences Curricula by Level of Schooling and Year of Graduation.

圖 8. 各級農業院校不同年期農產加工及農業類畢業生人數

al agriculture schools and technical institutes appears to have been too few in 1974. Data about all of the curricula are shown in Table 1. Appendix A. The curricula and levels of schooling with *too few graduates* in 1974 were as follows:

圖8亦展示農藝科畢業生人數。六十三年農校及農專畢業生人數均嫌過少。農校科別類數見附錄A表1。民國六十三年農校及農專畢業生較少之科別如下:

Curricula 科別	*Levels of Schooling* 學校級別
Crops and Soil Sciences 農藝	Senior V-A & Tech. Institute 高農及農專
Horticulture 園藝	Technical Institute 農專
Farm Mechanics & Agr. Engr. 農業機械與農業工程	Technical Institute 農專
Sericulture 蠶桑	Senior V-A School 高農
Agricultural Education and Extension 農業教育與推廣	Technical Institute 農專
Rural Home Economics 農村家事	Senior V-A & Tech. Institute 高農及農專

The curricula and levels of schooling with *too many graduates* in 1974 were as follows:

六十三年農校及農專畢業生較多之科別如下:

Curricula 科別	*Levels of Schooling* 學校級別
Animal Husb. & Vet. Science 畜牧獸醫	Senior V-A 高農
Farm Products Processing 食品加工	Senior V-A 高農

A sample of the graduates from the vocational and technical education programs in agriculture were contacted through a mail-questionnaire. Information was secured about their present positions and their opinions about the vocational and technical programs.*

本次研究係以通訊問卷方式對選作樣本之農職及農專畢業生從事調查，藉以明瞭其現況及對農專教育之意見。

---

* A sample was selected from senior vocational agriculture graduates for the years 195', 1955, 1959, 1964, and 1969; and from the graduates from the technical institutes in agriculture for the years 1964, and 1970. The overall net response was 85 percent from the sample of senior vocational agriculture graduates and 83 percent from the sample of graduates from the technical institutes in agriculture.

高農民國三十九，四十四，四十八，五十三及五十八等五個年度及農專五十三及五十九等兩個年度之部分畢業生選爲樣本。問卷收回率高農爲百分之八十五，農專爲百分之八十三。

About one-third of the graduates from the vocational agriculture programs and about one-fourth of the graduates from the technical agriculture programs were found to be employed in agriculture. Most of these were in non-farming agricultural positions as shown in Figure 9. Other data indicated that 29 percent of the vocational agriculture graduates and 13 percent of the technical agriculture graduates had two or more jobs; a higher percentage of graduates who were in the second, third and fourth quartiles (by academic rank) in their graduating classes were likely to have two or more jobs; and that the most recent graduates were the least likely to have two or more jobs. (See Table 1, Appendix B.)

約有三分之一之農校畢業生及四分之一之農專畢業生均從事於農業性工作。但大多數均非經營農事者，如圖 9。另種資料顯示百分之二十九之農校畢業生及百分之十三之農專畢業生，擁有兩項或兩項以上之工作；班中學業成績偏低者，多能獲得不止一項之工作。最近一個調查年期（五十八年）之農校畢業生獲得一項以上工作者之百分率最低（見附錄B表1。）

The proportion of vocational agriculture graduates engaged in agricultural occupations was found to vary according to the year of graduation and the length of time they had been available for employment. In Figure 9 the data are presented to show that in 1975 nearly 40 percent of the 1950 and 1955 graduates were engaged in agricultural occupations as their main occupations, 30 percent of the 1959 graduates, 27 percent of the 1964 graduates and 17 percent of the 1969 graduates. Also, Figure 9 contains data to indicate that the primary occupation of 23 percent of the 1964 technical agriculture graduates and 31 percent of the 1970 graduates was in agriculture.

農校畢業生從事於農業性職業之多寡，因不同畢業年期以及畢業之久暫而異。圖 9 顯示當民國六十四年，三十九年及四十四年期畢業業生從事於農業性職業者各有百分之四十。四十八年，百分之三十，五十三年，百分之二十七，五十八年，百分之十七。該圖亦顯示農專民國五十三年畢業生有百分之二十三，五十九年有百分之三十一從事於農業性職業。

The employment of vocational and technical agriculture graduates in agricultural occupations is affected by many factors. One of the factors is the opportunity for and attractiveness of employment in agricultural occupations compared with other opportunities. Figure 10 shows the longterm trend for employment of vocational agriculture graduates in agricultural occupations in relation to the proportion of the employed labor force in production agriculture, forestry and fishery occupations. When more than 50 percent of

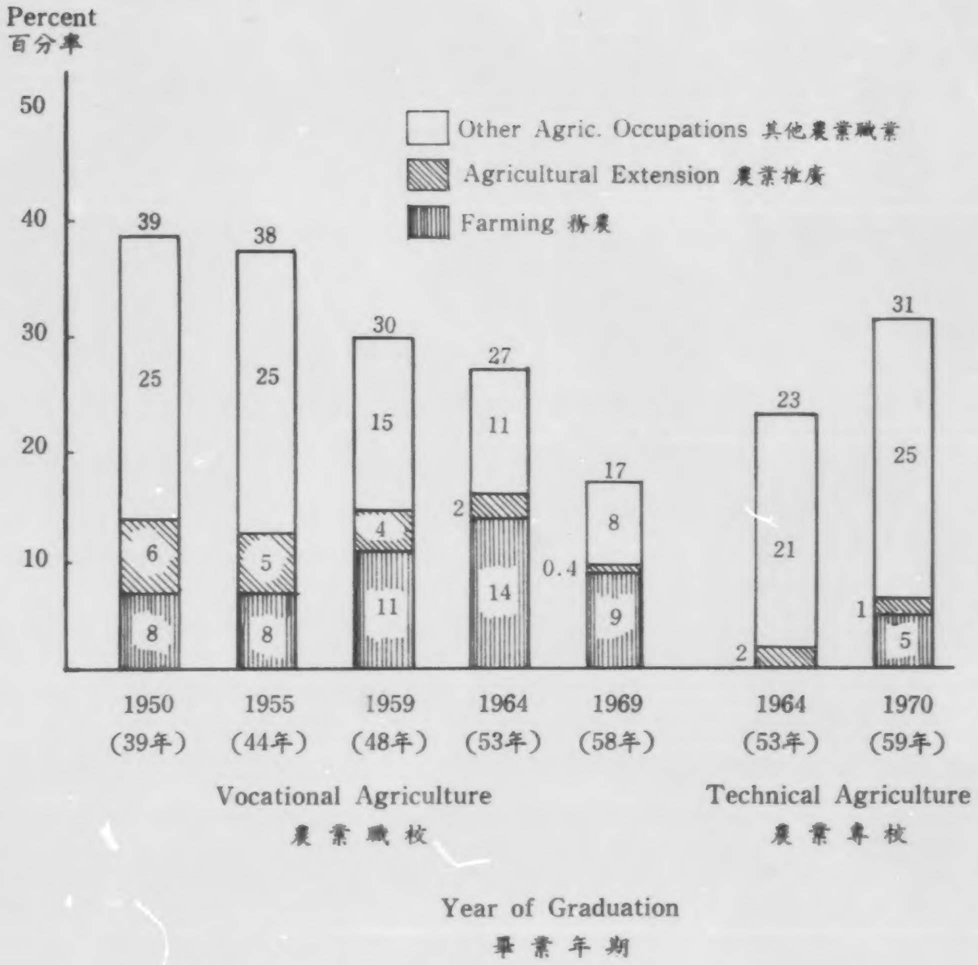


Figure 9. Pecent of Taiwan Vocational and Technical Agriculture Graduates for Selected Years Employed in Agriculture in 1975.

圖 9. 農業職業及專科學校各年期畢業生六十四年從事農業性職業者百分率

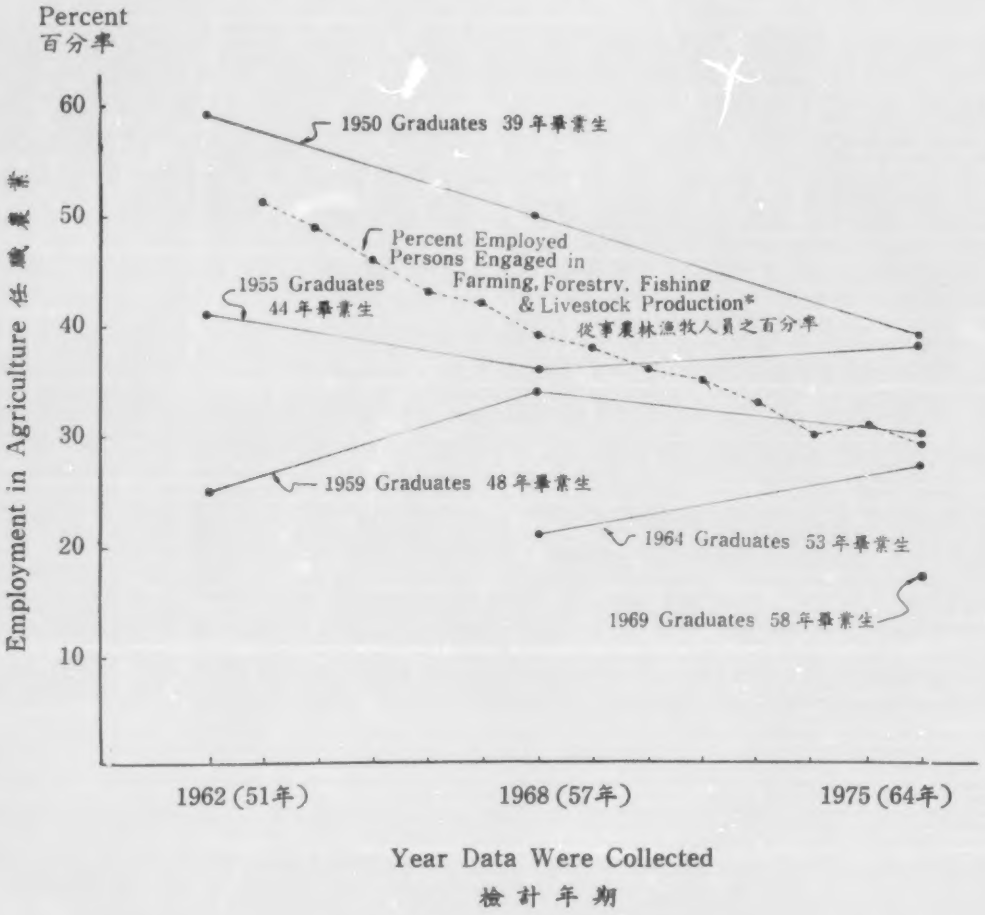


Figure 10. Employment in Agriculture by Taiwan Vocational Agriculture Graduates Measured at Three Periods in Time: 1962, 1968 and 1975.

圖 10. 五十一、五十七及六十四三個年期檢討農校畢業生從事農業性職業者百分率

Sources: Reports on research conducted by Meader, Lin and Hu in 1962, 1968, and 1974,

* Quarterly reporton the labor force survey in Taiwm, Republic of Chma, Mumber 46, 1975.

the employed population was in agricultural occupations, the proportion of the graduates engaged in agriculture was higher. As the proportion of the employed population in agriculture declined, so did the proportion of the graduates engaged in agricultural occupations. (See Table 2, Appendix B for additional data.)

有多種因素影響農校及農專畢業生是否從事農業性職業。其中之一爲就農業性職業之機會以及與非農業性職業相對的吸引性。圖10顯示農校畢業生從事農業性職業之長期趨勢對農林漁牧方面之產業工人比率上之關係。當就業人口有百分之五十以上從事農業性職業，農校畢業生就業於農業性工作者之比率亦高。反之，亦趨降低。（附錄B表2亦示若干資料）

The graduates from the vocational agriculture programs were more likely to be satisfied with their jobs than were the technical agriculture graduates. In both cases, the more recent graduates were more likely to be dissatisfied with their jobs than were the graduates from former years, as shown in Figure 11. Other data revealed the highest level of job satisfaction was expressed by the technical institute graduates who were self employed. The lowest levels of satisfaction were expressed by the graduates from the vocational agriculture schools and the technical institutes who were employed by private organizations. The graduates employed by government organizations were relatively well satisfied.

農校畢業生對工作滿意之程度較甚於農專畢業生者。由圖 11 顯示農專農職兩類畢業學生愈是新近畢業者，對所就工作愈不滿意。另種資料顯示，專科畢業學生對其所就工作最感滿意者，爲自營事業者。無論農校或農專畢業生在私人機構中任職者，均對所就職業最不滿意。在政府機構中任職者，均有相當程度之滿意。

The Schools and Institutes

農業職業暨專科學校

The vocational and technical education programs in agriculture were all administered through the Provincial Department of Education. The Division of Vocational Education was responsible for the vocational agriculture programs and the Division of Higher Education was responsible for the two technical institutes. There was neither a direct line nor a clearly defined advisory line between the Department of Education and the Department of Agriculture and Forestry. Although voluntary cooperation was evident through some special projects, the absence of clearly defined cooperative relationships

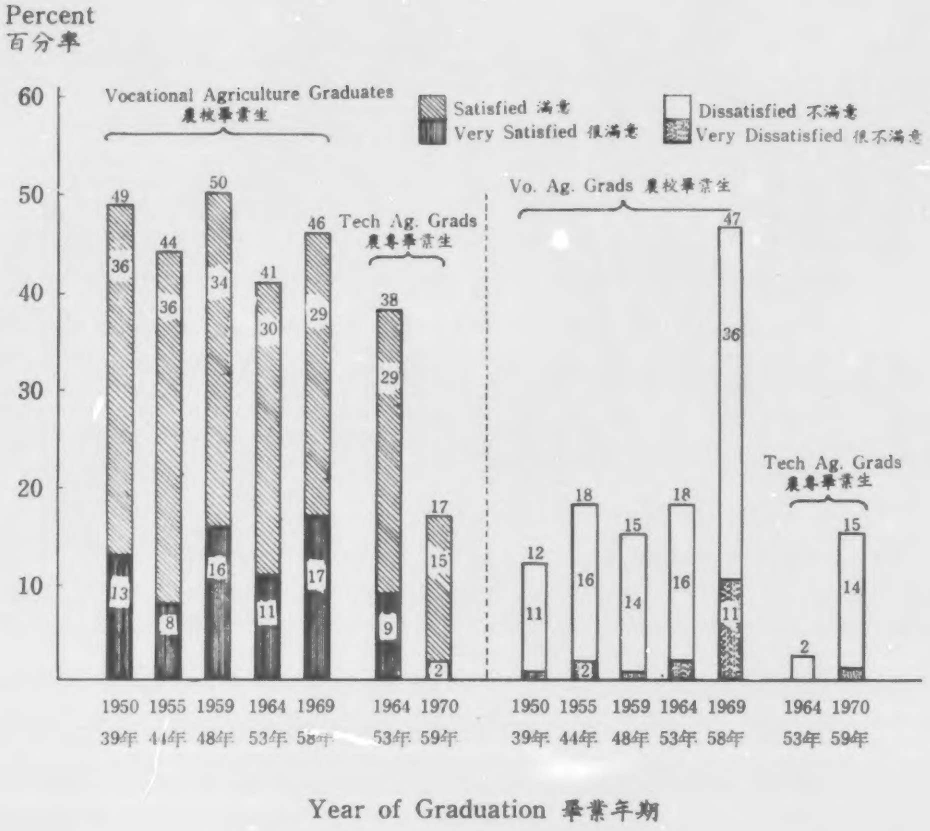


Figure 11. Percent Satisfaction and Dissatisfaction in 1975 with Present job by Vocational Agriculture and Technical Agriculture Graduates by Year of Graduation

圖 11. 農業職業及專科學校各年期畢業生對現職（六十四年）滿意之程度

for the agricultural programs of the two departments was a weakness that was quite evident.

The vocational agriculture programs were conducted through three types of schools: Provincial Senior Vocational Agriculture Schools (6); Provincial Senior Vocational Agricultural and Industrial Schools (17); and Provincial Senior Comprehensive High Schools (4). There was one Municipal school, the Taipei Senior Vocational Industry and Agriculture School. Each county except Penghu had at least one school which offered vocational instruction in agriculture.

農業職業及專科教育均由臺灣省政府教育廳直轄。第三科負責職業教育，第一科負責專科教育。教育廳與農林廳之間雖有某些合作計畫，但兩者之間既無直接連繫，亦無間接之溝通，實爲一弱點。

農業職農教育有三種不同之建制；高級農業職業學校（六所）；高級農工職業學校（十七所）；及設有農科之綜合高級中學（四所）。臺北市另有市立高級工農職業學校。除澎湖外，每縣均至少有一所農校。

The number of schools with vocational agriculture programs and the number of students enrolled in the various curricula were found to be greatly out-of-balance with the estimated number of annual entrants required for farming and other agricultural occupations. In 1974-75 there were 29 schools which had students enrolled in one or more curricula in vocational agriculture. One county had four such schools (Tainan), two counties had three such schools each (Changhwa and Yunlin) and one county had none (Penghu … an island off the west coast of Taiwan). These and other data about the cultivated area, number of farm households, agricultural employed population age 15 or more, commercial farm population, number of extension supervisors and employees in Farmer Associations, number of vocational agriculture students, the vocational agriculture curricula, and the specialized areas of agricultural products … all are reported in Appendix C on maps for each county. Table 2 contains most of the same data.

具有農科之學校數量及各科學生人數，與估計每年各種農業從業人員之需求量有甚大之差異。民國六十三及六十四年期，有二十九所學校設有一種或一種以上之農業科別，臺南縣有四所農校，彰化縣及雲林縣各有兩所。未設農校者爲澎湖縣。此項資料以及各縣耕地面積、農戶數，十五歲以上之業農人數，特產類別，並農會農校科別等資料均見附錄C。表2爲節錄之主要部分。

There was an estimated deficit of nearly 7,000 graduates from the vocational agriculture programs in 1974-75, as shown in Table 3 and Figure 12.

None of the counties had a surplus. The counties with the largest deficits in excess of 400 were:

估計六十三及六十四年農業職業學校畢業生人數尚不足七、〇〇〇人，如表3及圖12所示。無人數超過之縣份爲：

Yunlin 雲林	(−957)	Nantou 南投	(−524)
Changhwa 彰化	(−840)	Taipei 臺北	(−498)
Chiayi 嘉義	(−661)	Taichung 臺中	(−498)
Tainan 臺南	(−598)	Kaohsiung 高雄	(−447)

The imbalance was found to be very serious when the enrollment in the third year (year of graduation) in each curriculum was examined as shown in Table 4. There were only 801 students in the third year of the curricula directly related to farming. Two counties with large, intensive farming areas and farm populations (Yunlin and Chiayi) had no students enrolled in the final year of the faming curricula. The third year enrollment of 778 in Food Processing and 814 in Animal Husbandry and Veterinary indicated a surplus above the demand in those occupational areas.

The 617 enrolled in the third-year of the Farm Mechanics curriculum indicated an approximate balance with demand except there were five counties with no third-year enrollments. And approximately 30 percent of the enrollment was in the two southernmost counties (Kaohsuing and Pingtung). Sericulture, with only one school offering the curriculum, had too few students in the third-year to meet the demand.

當檢視三年級就學人數時，可查知供需不平衡之情況至爲嚴重，見表4。有關務農各科別之學生僅有八〇一人。兩個面積廣大，農業人口衆多之農業縣份（雲林及嘉義），三年級務農科別竟無人就讀。食品加工科三年級有七七八人，畜牧獸醫科有八一四人，顯然超過該等職業領域之需求人數。

農機科三年級學生有六一七名，除有五縣無該科三年級外，大致與需要相符。但其中約百分之三十之學生均集中最南端之高雄與屏東兩縣。蠶桑科僅有一校設置，就讀三年級之學生太少，不敷需求人數。

There were 613 third-year students enrolled in the Rural Home Economics curriculum in eleven of the 15 counties. That enrollment was too few to meet the demand for graduates.

The enrollent at the two technical institutes in the final year of the various curricula totaled approximately 1100 and probably was somewhat less

Table 2. Selected Data about Agriculture, Farmer Associations, Vocational Agriculture Programs and Specialized Areas of Agriculture for Taiwan by Counties

表 2. 有關農業、農會、農職教育及各縣農產等資料

County 縣別	Cultivated Area Sq. Km 耕地面積 (平方公里)	Number 數量					Vocational Agriculture 農業職校			Specialized Areas of Agricultural Products 地區性農業特產
		Farm Households 農戶	Agr. Empl. Pop. Age 15 & Over 十五歲以上業農人口	Comm'l Farm Pop. 企業農場人口	Farmer Assn. 農會		Number 數量		Curricula 科別	
					No. All Levels 各級總數	Ext. Person 推廣人員	Sch 校數	Students 學生		
Taipei 臺北	490.85	42,921	122,553	1,407	38	71	1	177	CA/AM & FP	Swine, Dairy & Special Crops (Tea & Vegetables) 猪、乳牛、茶、蔬菜
Ilan 宜蘭	284.16	30,631	59,812	724	13	35	1	707	CA/AM, FP, FM, F, & AHV	Swine 猪
Taoyuan 桃園	511.02	43,549	82,505	488	14	43	2	934	CA/AM, AHV, FM, & FP	Swine, Dairy & Special Crops (Tea) 猪、乳牛、茶
Hsinchu 新竹	410.12	35,463	84,548	729	16	47	1	317	CA/AM, FP, & AHV	Swine, Dairy, Beef & Special Crops (Tea, Vegetables & Mushrooms) 猪、乳牛、肉牛、茶、蔬菜、洋菇
Miaoli 苗栗	388.11	46,255	89,104	712	19	68	2	765	FP,F,AHV & Silk	Swine, Beef & Special Crops (Peanut, Citronella, Mushroom, Asparagus & Citrusfruits) 猪、肉牛、花生、香茅、洋菇、蘆筍、柑橘
Taichung 臺中	613.37	74,060	199,579	1,524	31	106	3	1,116	CA/AM, AH,FP,FM, ACE, F, & RHE	Swine, Common Crops (Tobacco, Sugar Cane, & Sorghum) & Special Crops (Lichee, Peas, Apple, Citrus Fruits, Grape, Mushroom, Loquat, Bamboo Shoot & Flowers) 猪、煙草、甘蔗、高粱、荔枝、花生、蘋果、柑橘、葡萄、洋菇、枇杷、竹筍、花卉
Changhwa 彰化	760.65	100,802	234,246	1,343	27	77	3	681	CA/AM, FP, FM, & RHE	Swine, Dairy, Common Crops (Sugar Cane) & Special Crops (Peanuts, Pineapple, Grapes, Lichee, Asparagus, Mushrooms, Garlic, Bamboo Shoots, Vegetables & Flowers) 猪、乳牛、甘蔗、花生、鳳梨、葡萄、荔枝、蘆筍、洋菇、蒜、竹筍、蔬菜、花卉
Yunlin 雲林	862.45	82,745	258,164	4,900	21	85	3	710	CA/AM, FP, FM, & AHV	Swine, Common Crops (Corn,Sugar Cane) & Special Crops (Peanuts, Peppermint, Asparagus, Vegetables, Garlic, watermelon, & Bamboo Shoot) 猪、玉米、甘蔗、花生、薄荷、蘆筍、蔬菜、蒜、西瓜、竹筍
Nantou 南投	565.86	52,159	125,722	577	14	57	1	346	CA/AM, F & RHE	Swine, Beef, & Special Crops (Millet, Prums Mume, Tobacco, Lichee, Cassava, Pear, Banana, Pineapple, Silk, & Bamboo Shoots) 猪、肉牛、粟、梅、煙草、荔枝、樹薯、梨、香蕉、鳳梨、絲、竹筍

Chiayi 嘉 義	695.31	65,645	172,912	1,071	20	85	2	396	FP, & FM	Swine, Common Crops (Corn, Sugar Cane & Sorghum) & Special Crops (Citrus Fruits, Lichee, Tobacco, Asparagus, Peanuts, Soybean, Vegetables, & Bamboo Shoots) 猪、玉米、甘蔗、高粱、柑橘、荔枝、煙草、蘆筍、花生、大豆、蔬菜、竹筍
Tainan 臺 南	1009.98	101,955	259,613	1,269	35	157	4	1,693	CA/AM, AHV, FP, FM, ACE, FB & RHE	Swine, Dairy, Common Crops (Corn, Sugar Cane & Sorghum) & Special Crops (Cassava, Pineapple, Citrus Fruits, Mango, Papaya. Lichee, Asparagus, Mushroom, Silk & Garlic) 猪、乳牛、玉米、樹薯、鳳梨、柑橘、芒果、木瓜、荔枝、蘆筍、洋菇、絲、蒜
Koohsuing 高 雄	626.63	66,340	189,326	3,715	37	111	2	1,320	CA/AM, AHV, FP, FM & RHE	Swine, Dairy, Common Crops (Sugar Cane) & Special Crops (Soybean, Tobacco, Banana, Pineapple, Papaya, & Vegetables) 猪、乳牛、甘蔗、大豆、煙草、香蕉、鳳梨、木瓜、蔬菜
Pingtung 屏 東	810.37	69,724	224,947	1,876	34	82	2	1,525	CA/AM, AHV, FP, FM & RHE	Swine, Beef, Common Crops (Sugar Cane) & Special Crops (Millet, Soybeans, Tobacco, Banana, Pineapple, & Silk) 猪、肉牛、甘蔗、粟、大豆、煙草、香蕉、鳳梨、絲
Taitung 臺 東	444.90	27,481	68,889	2,413	17	36	1	380	CA/AM, AHV, FP & FM	Swine, Beef, Common Crops (Sugar Cane) & Special Crops (Millet, Peanuella, Pineapple, Citrs Fruits, & Silk) 猪、肉牛、甘蔗、粟、花生、香茅、鳳梨、柑橘、絲
Hualien 花 蓮	416.60	26,144	64,106	4,306	14	36	1	1,087	CA/AM, AHV, FP, FM, ACE, F & RHE	Swine, Common Crops (Sugar Cane) & Special Crops (Millet, Soybean, Peanut, Citronella & Watermelon) 猪、甘蔗、粟、大豆、花生、香茅、西瓜
Penghu 澎 湖	65.83	10,691	29,863	0	7	14	0	0	-None-	Swine, Beef, Sorghum & Special Crops (Peanut) 猪、肉牛、高粱、花生

Note: See accompaning figures for sources of data

* CA/AM=Comprehensive Agriculture/Agriculture Management 綜合農業/農業經營
AHV=Animal Husbandry and Veterinary 畜牧獸醫
FP=Food Processing or Farm Products Processing 食品加工
ACE=Agricultural Civil Engineering 農業土木
FM=Farm Mechanics 農業機械
FB=Farm Business 農場經營
F=Forestry 森林
RHE=Rural Home Economics 農村家事

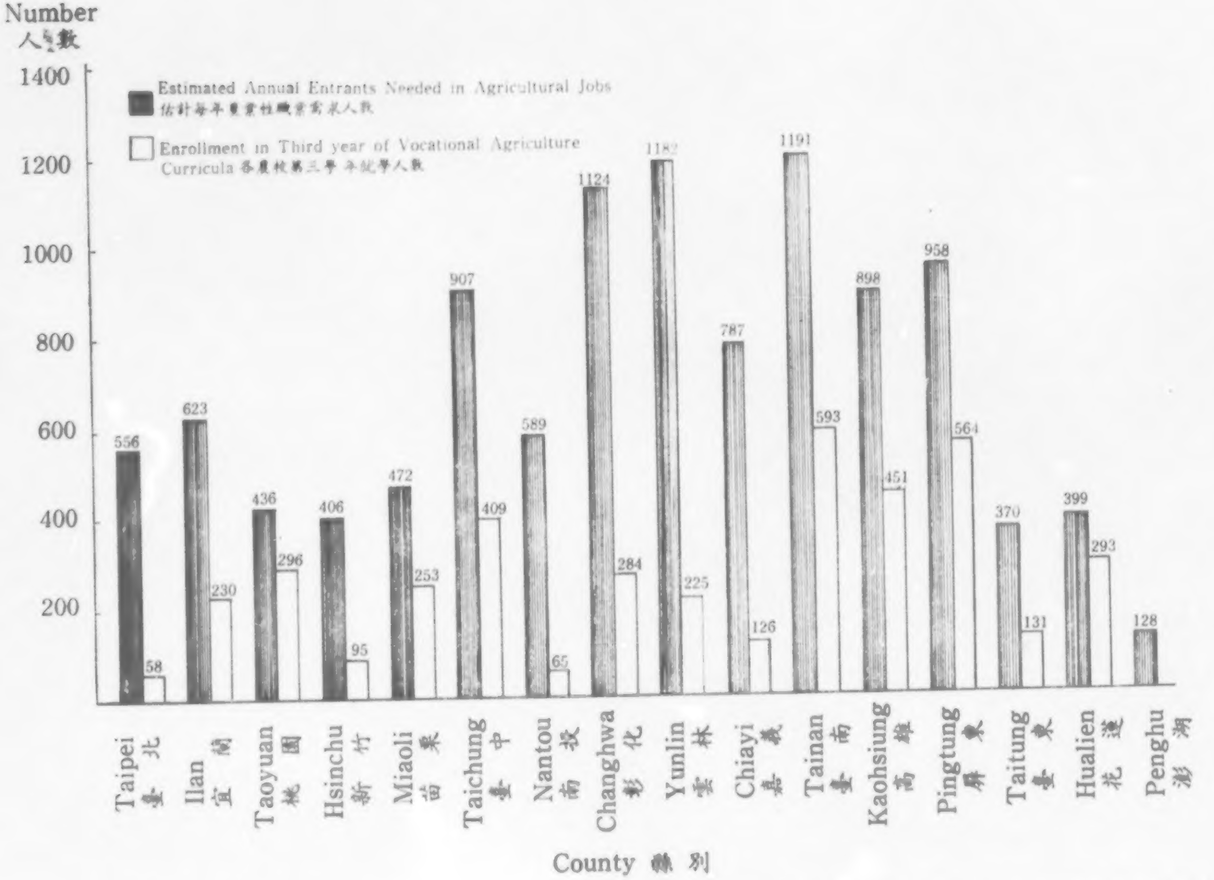


Figure 12. Estimated Annual Entrants Needed in Agricultural Jobs and Enrollment in Third Year of Taiwan Vocational Agriculture Curricula by Counties, 1974-75

圖 12. 以縣際區分農業職業學校六十三學年度三年級在學人數及估計每年農業性職業需求人數

Table 3. Enrollment in Vocational Agriculture and Estimated Annual Entrants Needed in Agricultural Jobs in Taiwan by Counties[1]

表 3. 農校學生人數及估計各縣每年農業從業人員之需求數

County 縣別	Estimated Ave. Annual Entrants Needed in Agricultural Jobs[2] 估計每年農業從業人員需求數	Number Students in Vocational Agriculture[3] 農校學生數		Surplus or Deficit[4] 過剩或不足
		Total 總數	3rd Year 三年總人數	
Taipei 臺北	556	177	58	−498
Ilan 宜蘭	623	706	230	−393
Taoyuan 桃園	436	934	296	−140
Hsinchu 新竹	406	317	95	−311
Miaoli 苗栗	472	765	253	−219
Taichung 臺中	907	1,105	409	−498
Nantou 南投	589	294	65	−524
Changhwa 彰化	1,124	681	284	−840
Yunlin 雲林	1,182	710	225	−957
Chiayi 嘉義	787	396	126	−661
Tainan 臺南	1,191	1,693	593	−598
Kaohsiung 高雄	898	1,320	451	−447
Pingtung 屏東	958	1,525	564	−394
Taitung 臺東	370	380	131	−239
Hualien 花蓮	399	1,087	293	−106
Penghu 澎湖	128	0	0	−128
Total 總計	11,026	12,090	4,073	−6,953

1. Sources of data are found in the Appendices on the Key to Maps 資料來源見附錄分縣圖例
2. Average Annual Entrants Needed in Farming and Non-Farming Agr.
   耕作及非耕作農業性職業年平均需求量

$$\text{Jobs} = \frac{A+B}{2} + C$$

A = No. Farm Households × 1%
農戶數
B = No. Agr. Employed Pop. 15 Years & Older × 0.5%
十五歲以上業農性就業人口
C = No. Commercial Farm Pop. × 2.5%
企業農場人口

3. Reports from schools about enrollment during 1974-75 六十三學年度在學人數
4. Annual Entrants Required minus No. Vo. Ag. Students in 3rd Year
   農業人員需求數減去三年級學生數

Table 4. Enrollment in Third Year of Taiwan Vocational Agriculture Curricula by County and Curricula, 1974-75.

表 4. 六十三學年度以縣計農校在校三年級分科學生人數

County 縣 別	Number Enrolled in Third Year 第三學年在學人數								
	Farming* 農 業	Forestry 森 林	Food Proce. 食品加工	Ani. Husb. Vet. 畜牧獸醫	Agr. Civil Engineering 農業土木	Farm Mech. 農業機械	Sericulture 蠶桑	Rural Home Ec. 農村家事	Total 總 計
Taipei 臺北	22	70	31	0	0	0	0	0	58
Ilan 宜蘭	63	42	34	17	0	39	0	35	230
Taoyuan 桃園	113	0	23	96	0	64	0	0	296
Hsinchu 新竹	19	0	43	33	0	0	0	0	95
Misol' 苗栗	51	41	46	35	0	0	20	60	253
Taichug 臺中	90	20	105	41	23	49	0	81	409
Nantou 南投	42	0	0	0	0	0	0	23	65
Changhwa 彰化	41	0	78	70	17	36	0	42	284
Yunlin 雲林	0	0	40	85	18	52	0	30	225
Chiayi 嘉義	0	0	43	27	17	38	0	0	126
Tainan 臺南	106	0	182	118	1[illegible]	60	0	26	593
Kaohsuing 高雄	46	26	54	83	24	79	0	139	451
Pingtung 屏東	146	0	53	152	0	102	0	111	564
Taitung 臺東	23	0	20	33	0	27	0	28	131
Hualien 花蓮	34	53	26	24	47	71	0	38	293
Penghu 澎湖	0	0	0	0	0	0	0	0	0
Total	801	182	778	814	248	617	20	613	4073

Source: Reports from schools

* Includes Farm Business, Comprehensive Agriculture, Agronomy, Horticulture and Agricultural Extension
包括農場經營科、綜合農業科、農藝科、園藝科及農業推廣科。

than the overall demand for technicians. It was divided into the various curricula as follows:

十五個縣份有十一個縣中之學校設有農村家事科。三年級學生人數共六一三名，不敷需要。

兩所農專各個科別，應屆畢業年期之學生總數約爲一、一〇〇名。對供應技術人員之需求略嫌不敷。各種科別及就讀人數如下所示：

Agronomy 農藝	184
Horticulture 園藝	50
Food Processing 食品加工	158
Forestry 森林	124
Soil & Water Conservation 水土保持	29
Agricultural Chemistry 農業化學	31
Animal Husbandry 畜牧	88
Veterinary 獸醫	87
Animal Husbandry & Veterinary 畜牧獸醫	93
Agricultural Engineering 農業工程	96
Farm Machinery 農業機械	97
Farm Mechanics 農業機械工程	95
Total 總計	1,132

The number for graduating from the Veterinary and Animal Husbandry and Veterinary curricula (181) probably represented a surplus above the demand; but the 88 in Animal Husbandry, if the curriculum emphasis were on preparation for the management and technician level positions, probably was a deficit in relation to the demand.

The strengths and weaknesses of the different types of schools seemed to be due more to the strengths and weaknesses of the administrators, teachers and staffs than to any characteristics inherent in the organizational structures. For example, it is critical that the principal of the school establish and maintain a close working relationship with administrators of the other agricultural organizations serving the same area. Close working relationships are needed with the research stations, agricultural improvement stations, farmer associations, marketing organizations, agricultural product processing plants, and others. In some schools, there was evidence of strong relationships to the agricultural community; in other schools such relationships obviously were given a low priority.

獸醫科與畜牧獸醫科應屆畢業學生人數（一八一人），可能超過對該項技術人員之需求數，但如着重管理與技術性之教學，可能尚有不敷。

不論何種學校，其優劣大部分取決於行政主管及教職員，而不在於其體制。如某校校長能與當地農業機構建立並維持一良好之工作關係則至爲重要。與研究所、改良場、農會、運銷機構、食品工廠等建立密切之工作關係均屬需要。某些學校此一工作表現良好，某些則未予重視。

The administrative organization of the schools provided delegation of responsibilities for curriculum and instruction, student affairs, and general affairs. The organization did not provide for adequate visibility and reponsibility/authority for the practical experience program in agriculture on the school farm, in cooperating businesses and on cooperating farms.

The two technical institutes of agriculture were located in the southern one-third of Taiwan and both were in excellent farming areas. Both had strong top administrators with backgrounds in agriculture who were concerned about the quality of their programs. The was evidence of cooperative arrangemnts for developement of educational programs in cooperation with the agricultural businesses and industries, some of the major employers of graduates from the institutes. Such relationships need to be strengthened and formalized for all of the program areas.

學校行政當局負責教務，訓導與總務等項業務之推行。但對各項實習業務，如校內農場實習，校外實習及建教計作等並未積極推動。

兩所農業專科學校均位於本省南部三分之一之地段，且爲優良之農業地區。各有强力並具農業背景之領導人士，並對技術教育之推動不遺餘力。與農業、工業機構合作以發展教育有明顯之績效。若干企業主持人亦係兩校之校友。此等關係應予加强並擴大。

The three-year program at the Pingtung Agricultural Institute was viewed by both the faculty and the students as a problem: the graduates had "more" education than the typical two-year institute graduates but lacked the "degree" awarded to graduates from baccalaureate programs. There were strong feelings expressed that the program should be changed but there was no unanimity about "adding one more year" or "dropping one year."

Both institutes operated five-year programs. Those programs required many resources in terms of facilities, equipment and instructional staff. An obvious strength of the five-year programs was the extent to which the students came from farming backgrounds, Two weaknesses were that (a) so many resources were required to provide the general instuction which could be offered by regular senior high scools, either achademic or vocational; and (b) the students had to make a choice at a relatively young age regarding their specialization in agriculture.

屏東農專教職員與學生對現有之三年制均感困擾。畢業學生曾接受比標準的二年制多一年之教育，但又不足達到授予學位之程度。一般均有强烈意願改變此一制度，惟究應增多一年或減少一年迄無定論。

兩所農專均設有五年制，需要多種教學設施，包括師資與設備等。就讀五年制之學生多來自農家爲其優點。但亦有兩項缺點：(a)需要安排正規高中或高農可以提供之普通教學；(b)學生在其年齡尚輕，性向未定之時，即須決定其專業類別。

The Curricula

科　別

The vocational agriculture programs included eight curricula, which had been revised effective in the fall of 1974 and several or experimental curricula. The revised curricula included more emphaais on practice and laboratory time; a consolidation of several curricula into the agricultural management curriculum; and additional emphasis on cooperative education involving planned educational experiences on a job in business or industry.

The teachers and administrators had mixed reactions to the revised curriculum. The increased emphasis in the curriculum on practice, the application of theory to solve problems, the learning by doing, and similar concepts were viewed as desirable. The lack of appropriate instructional materials for teachers to make use of the "practice" time, the lack of up-to-date textbooks for the revised courses, and the absence of an effective in-service program to help teachers understand how to adapt to the revised curricula all contributed to some dissatisfaction with the new curricula during its first year of adoption. Students voiced dissatisfaction with what they viewed as too much time spent doing regular farm labor. But the aim of the curricula, to produce willing and occupationally competent basic agricultural workers, was viewed as good.

農職教育之體制中，設有八種科別。科別及課程經於六十三年修訂實施。新訂課程加多實習實驗時間；將若干科別合併爲農業經營科；並加强建教合作。

教師與學校主管人士對此反應不一。加强實習，將理論實證以解決問題及自操作中學習等觀念，咸表同意。缺少適當之設備，不能使實習名副其實；缺少適合當代需要並配合課程標準之教科書，以及教師未能體認及適應新課程等缺失，均在實施之第一年

出現。學生則認爲耗費於農場勞動性工作時間太多，但對培養具有工作能力之農業從業人員之基本目標均認爲正確。

There were some requests from teachers to be able to adapt the courses and schedules for teaching to the local situations. For example, if the school was located in an area which normally received much rainfall, the instructors requested permission to use blocks of time for instruction. Such blocks of time would help accomplish essential field practice during good weather and then conduct related classroom instruction when field work could not be accomplished.

There were some requests for further reduction in the number of courses in the curricula. The students were required to study as many as ten courses in one week in most of the curricula. By title, the courses appeared to be very similar to courses in the curricula at an agricultural college. The large number of courses resulted in compartmentalizing the instruction and inhibited the teaching of some concepts at the time when farmers were experiencing the problems or performing the practices. The following are brief comments on weaknesses in the several curricula:

某些教師曾提出適合個別地區教學方式之建議。其一爲如學校位於經常有大量降雨之地區，教師則可利用整部時間在天氣良好時完成主要田間實習。而當不能在田間工作時，再實施課堂教學。

亦有作進一步減少科目種類之建議。多數科別所設之學科多在十種以上。自科目名稱視之，猶如大學之專業課程。多量之科目導致教學之過細畫分以及觀念上之混淆，但農民在田間之操作則爲實際體驗之工作。茲列舉若干科別有待改進之處：

Agribusiness

1. Lacks the teaching of practices in livestock and poultry which are common on many farms.
2. The farm mechanization instruction was too limited (22 hours out of the total 222 hours in three years).
3. Lacks the teaching of farm management and record keeping practices.

Agricultural Machinery

1. Lacks applied courses in soils, disease and insect control, and field crop mechanical cultural practices.
2. Should include instruction on farm management and business record keeping practices.

Agricultural Civil Engineering

1. Lacks applied courses in soils, and field crop cultural practices.

Food Processing

1. Lacks applied courses in cultural and handling practices for fruit and vegetables and agricultural product quality standards.

Animal Husbandry and Veterinary Science

1. Too heavy on the veterinary science aspects.
2. Lacks applied courses in soils, forage crops, and animal nutrition; production practices for poultry, swine, dairy and beef; and farm management and record keeping practices.

Forestry

1. Lacks applied courses in soils, and soil conservation.

Sericulture

1. Lacks applied courses in soils, field crop cultural practices, farm management and record keeping practices.

Home Economics

1. Lacks applied courses in the work of the farm, especially farm management and record keeping practices.
2. Should include elective minor areas such as accounting and clerical, child care, handcraft and factory machine operation.

農場經營

1. 缺少禽畜飼養之實習課，此爲一般農場通常所經營者。
2. 農業機具講授之時數太少（三學年二二二教學總時數中僅有二十二小時）。
3. 缺少農場管理及農家記帳等方面課程。

農業機械

1. 缺少土壤，作物栽培等應用性課程。
2. 農場管理及農家記帳實習等均應增列。

農業土木

1. 作物及土壤方面之實習課應予增列。

食品加工

1. 缺少果蔬類作物栽培，農產品分級標準以及產品加工前之處理等實用性課程。

畜牧獸醫

1. 獸醫方面課程偏重。

2. 缺少土壤，飼料作物，家畜營養等應用課程及禽畜飼養，農場管理及記帳等實習時間。

森林

1. 缺少土壤及水土保持等課程。

蠶桑

1. 缺少土壤，作物栽培技術，農場管理及記帳等應用課程。

農村家事

1. 缺少農事尤其如農場管理，農家記帳等方面之課程。
2. 會計、事務、兒童保育、手工藝及工廠車間操作等均應列爲選修。

The curricula were available in some schools but not all schools with vocational agriculture programs. The basic agribusiness or agriculture management curriculum, the curriculum to prepare young men and women to return to the farm, (or its antecedent curricula), were available in only 19 of the schools during 1974-75. On the other hand, the Food Processing curriculum was available in 24 schools, and the Animal Husbandry and Veterinary curriculum was available in 23 schools. Those two curricula with their high level of specilization probably should not be available in more than one-fourth or one-third of the schools. And the Home Economic curriculum, available in 17 of the schools, should be available in all of the schools.

各種科別並非所有學校均行俱備。培養青年男女從事農務之農場經營科，六十三學年度僅有十九所設置。但食品加工科與畜牧獸醫科則各有二十四及二十三所學校設置。由於該等科別之專門性，設科之數量應不超過學校數之四分之一或三分之一。農村家事科有十七所學校設置，應普及每一學校。

The experimental progroms for farm business management, sericulture, farmer training in agricultural mechanization and youth guidance were viewed as strong programs worthy of expansion and extension. The dairy cow management class was viewed as successful but more appropriate at the two technical institutes with their supporting dairy herds and equipment.

None of the curricula for vocational agriculture programs provided training for the students in either member or leader roles for the basic farmer organizations. The students should receive training in the work of the organizations, in the roles of members, employees, managers, board of directors, and others. Such instruction should contribute to stronger and more effective farmer organizations.

農場及蠶絲經營實驗班，農民農機訓練以及青年輔導等均辦理良好並應予以擴大。乳牛經營實驗班之辦理亦屬良好，但應由兩所農專辦理，以期由該兩校之牛隻及設備等予以支持。

無一所農校曾提供青年從事基層農會人員之訓練。青年應施以在農民組織之任職及其領導人員等方面之訓練，期使該組織之功能更行强化。

The Students

學 生

The quality of the vocational and technical education programs in agriculture depends, in part, upon the nature and number of the students enrolled. It is critical that the student who enter the programs have already made a tentative choice to prepare for a career in agriculture. One of the basic weaknesses in the programs was the process for selection of students to enter the programs.

Student entry into the programs was by examination. The examinations provided objectivity in the selection process but the examinations included no measures of either ability or interest in agriculture. Consequently, the students most interested in agriculture were not likely to be selected for admission into the agricultural curriculum of their choice. The students most likely to gain admission to the vocational and technical agriculture programs were those with non-farm backgrounds who did not have agriculture as one of their top three curricular choices.

農業技術及職業教育之素質，部分視學生之品質與數量而定。學生當入學之初，即預以農業作爲擇業之對象至關重要。技職教育基本上缺點之一乃在招生方式。

學生之入學均須經過考試。考試在選取之方式上固具客觀性，但對農業之興趣與能力則無從衡量。對農業有興趣之學生常不能就讀其選擇之科別。多數入學者均係不具農業背景，家庭亦不從事所填三種志願科別中之任何農事行業。

Opinions solicited from teachers and administrators regarding the students were strongly in favor of adopting practices which would encourage students to enter agricultural curricula, and especially students with interests in agricultural careers. Many respondents urged the adoption of a system to accept farmers' children directly into the programs, without the usual academic entrance examination. Other selection criteria were proposed such as "have an opportunity to farm."

The practice of holding the entrance examination with other vocational schools, a practice followed since 1969 in some areas, was generally viewed as a strength. Reports were received that use of the practice had resulted in more students and students with higher qualifications. In addition, it was recommended by administrators that scholarships be made available to encourage students to enter the agricultural curricula.

The varied curricula and programs at the two technical institutes provided the students with many options for training in agriculture. However, one of the weaknesses was the lack of farming experiences by most of the students. About two out of every three institute students came from non-farm home backgrounds. And four out of every five students in the regular three-year programs had non-farm home backgrounds.

若干學校行政主管人士及教師，贊成實施鼓勵學生進入農校尤以對從農有興趣者之實際方案。亦有甚多人士主張採行農家子弟選行進入農校之辦法，而不經由入學考試。另有若干對學生入學之選擇標準之建議，如「有從農之機會者」。

某些地區自五十八年採行之職業學校聯合招生辦法值得推許。實施此種辦法可招收較多且素質較優之學生。此外，若干學校主管人士稱已設置獎學金以鼓勵學生就讀農校。

兩所農業專科學校設有多種不同之科別，使學生能對從事農業之類別有所選擇。但多數學生從無農事經驗爲其缺點。有三分之二之學生來自非農家之家庭。三年制日間部學生有五分之四來自非農家家庭。

The Teachers

教　師

The teachers of agriculture for the vocational programs had excellent academic qualifications, were experienced teachers and dedicated to their teaching. However, they lacked recent in-service education to keep them up-to-date in both the agricultural technology and professional education concepts.

The teachers of agriculture for the technical programs had excellent acadmic qualifications, were experienced teachers, and very interested in teaching and research. However, in general their goals for instruction were too heavy on the academic aspect of professional agriculturalists rather than the technicians in agriculture. In other words, they appeared to be doing an excellent job of teaching but the emphasis was on the wrong parts of the program. In-service instruction was not available to the faculty at the institutes to help them design and implement instruction specifically for preparation of agricultural technicians. And there were no requirements of successful occupational experience as a prerequisite for the teaching posts in the institutes.

農業職業學校之教師，均爲學歷優良，富有教學經驗及敬業精神者。但缺少在農業技術及專業教育觀念方面之在職訓練，使其保持清新。

農業專科學校之教師，一如農職教師，均爲學歷優良，富有教學經驗及獻身於教學及研究工作者。但其教學多偏重於農業專家之訓練而非在農業技術人才方面。教學雖屬優良但未掌握技術教育之重點。教師應有在職之研習，協助其在教學及實習尤其如何培養農業技術人才上之安排。對教師是否具有實際經驗爲其必備條件，未作何等要求。

The Facilities

設　備

The facilities for classroom lectures and demonstrations at both the high schools and institutes were more adequate than the facilities for student practice. In general, the land available for student practice and projects was very inadequate. The laboratories tended to be outdated and inadequate. The facilities for instruction in agricultural mechanics ranged from poor to adequate for the vocational programs; and from poor to excellent at the institutes. The livestock and livestock facilities at the two institutes were much more appropriate and adequate than at the high schools.

Most of the schools and both of the institutes had dormitories for students. The dormitory space needs to be improved and expanded at many of the schools. The new dormitories at the institutes were very appropriate but both institutes still had to use some old, inadequate dormitory facilities.

The dormitories and houses for faculty need to be expanded and upgraded at both the high schools and institutes.

農校及農專在教學及演示方面之設備，優於供學生實習方面者。能供學生實習之土地，一般言，均甚狹小。實驗室多呈陳舊不合需用。農業機械之教學設備，農校方面有者欠缺有者尚可，農專方面自欠缺至良好者均有。畜牧方面之設備，農專較農校者超出甚多。

兩所農專及多數農校均備有學生宿舍。大多數學生宿舍均待擴充與改善。農專新建之宿舍至爲良好，舊有者仍待繼續改建。

農專及農校之教職員宿舍亦待擴建與改善。

IV. LOOKING AHEAD (RECOMMENDATIONS)

未來展望（建議事項）

The conditions for agricultural education are often a reflection of the general conditions for agriculure. The economic and social conditions which prevail for farmers and those who serve farmers have a direct bearing on the interests and attitudes of young people who are preparing for careers. If farmers can earn reasonable returns for their labor and management, if their living conditions are viewed as reasonable when compared to the living conditions for their "city cousins," then farming as a way of life can be attractive to young people as a career. If the agricultural extension workers, junior agricultural techicians and others who serve farmers have a reasonable wage with prospects for promotion and advancement, then employment in such occupations may be attractive to young people who are planning and preparing for careers.

農業教育之强弱常反映於農業之盛衰。經濟與社會之情況有利於農民或非農民，直接影響青年擇業之意向。如農民能自其勞務獲得合理之報酬，其生活條件與城市人相較亦差强人意時，經營農事對青年人則具有吸引力。如農業推廣人員，初級技術人員及服務農村之各種公職人員能有合理之待遇及升遷機會，則此等職位對青年人之擇業亦具吸引力。

During the past several years, especially since about the mid-sixties, the industrialisation in Taiwan has been accelerating. The growth in employment opportunities off-the-farm with more favorable working conditions and higher wages have been very positive factors for the overall economic health and social improvement in Taiwan. In addition, the reduced birth rate has been a major contributor to the general improvements of living conditions.

At the same time it appears that the farmers and agricultural workers did not share as much in the improved conditions. Prior to the adoption of new policies for agriculture in 1972, the farmers income was reduced and the wages and advancement opportunities for wage and salaried workers in agriculture did not keep pace with the wages for workers in the non-agriculture sector.

Also, it appears to the researchers that the efforts by Provincial Department of Education to improve vocational and technical education were focused primarily on the improvement and expansion of industrial and commercial education. There has been a general decline in the quality of the vocational and technical agriculture programs.

過去若干年來，尤自五十年代中期，本省經濟之朝向工業化日形加速。非農業性就業之機會加多，及其良好之工作環境，較高之報酬，對經濟之强固，社會之進步均爲有力之因素。更有進者，生育率之下降對生活條件之改善，亦顯出其功效。

與此同時，農民及農業工作人員所能分享者，落於進步成果之後。在民國六十一年實施新的農業政策以前，農民之收入降低，受薪之農業工作人員其薪酬及升遷機會不能與非農業性工作者相匹敵。

筆者復有此體認，即教育廳歷年將技職教育發展之重點置於工業及商業方面，是以農業技職教育日趨式微。

Since 1972 several improvements have been made and recognition should be given to those improvements, such as the following:

1. Pilot and experimental projects have been initiated in several schools including a young farmer traning program, a dairy cow management program, an agri-business class, and a rural youth guidance project.
2. New equipment for agricultural mechanics has been placed in several schools through the cooperative efforts of the Mingteh Foundation, the JCRR, PDAF, and PDE.
3. Cooperation with Farmer Associations for special classes to train farmers to operate, service and maintain new machines for use in rice production. The Provincial Food Bureau has provided some support for these classes.
4. New and revised curricula for senior vocational agriclture students with more emphasis in the curricula on student practice.
5. Creation of a new position, namely Dean of Practice, in the administrative structure for vocational schools. The description of this position includes responsibility for coordination of the student placement in work stations away from school.
6. Special community service projects have been initiated by many schools. One of the outstanding examples is the "Plowing Teams" for helping local farmers plow the paddy land and at the same time provide students with opportunities to "learn" and "earn".
7. The National Youth Commission has provided loans for young people to establish agricultural businesses, including the establishment of farm mechanization teams. Also, the NYC has encouraged the establishment of school-business/industry cooperation for placement of vocational and

technical agriculture graduates.

8. The government policies for strengthening agriculture and rural development have stopped the decline and have started improvements which are reflected in greater interest by students for studying agriculture.

自民國六十一年，農業技職教育在各方面均有若干改革與進步，其犖犖大者有：

1. 在若干農校中設置青年農民訓練班，乳牛經營實驗班，農場經營實驗班，並實施農村青年輔導計畫等。
2. 由於教育廳、農林廳、農復會及明德基金會之支持與補助，若干農校獲得新式農業機械。
3. 與農會合作並在糧食局支持下，舉辦農民講習班，從事新型稻作機械操作及保養之訓練。
4. 修訂高級農業職業學校課程標準，加强各科之實習課程。
5. 農校設置實習主任之職位，主持學生校內及校外之各種實習業務。
6. 多數學校推展各項農村服務工作，最値稱道者爲組織代耕隊，協助當地農民從事水田之耕作。學生藉此亦可獲得學習及酬金之機會。
7. 行政院青年輔導委員會爲鼓勵青年從事農業性之創業，而設置貸款辦法及建立農事機耕隊。並對學校與企業界間之溝通以安置農校及農專畢業生之工作不遺餘力。
8. 政府積極推動各項農業發展計畫，不但有效的制止農業之衰退，且已開始有所發展，由於學生對修習農業興趣之加大予以映證。

Recommendations for the future have been made in seven areas;

1. The system for agricultural education
2. Manpower need assessment
3. Technical agriculture programs
4. Vocational agriculture programs
5. Pre-vocational agriculture in middle schools
6. Teacher education in agriculture
7. Administration and supervision

對未來發展之建議，包括下列七類：

1. 農業教育之體系
2. 人力需求之預估
3. 農業技術教育
4. 農業職業教育
5. 國民中學之農業課程
6. 農業師資教育
7. 行政與輔導

The System for Agricultural Education

農業教育之體系

The system should include several levels of education, both formal and non-formal forms; provide for direct and indirect educational programs for maintaining a strong production agriculture, and provide for the three broad functions of teaching, research, and extension.

At least four levels of formal agricultural education should be utilized with the purposes of each level clearly identified:

Four-year colleges of agriculture: baccalaureate and graduate degrees; research, teaching and extension functions; preparation of professional workers in agriculture for reseach, teaching and agriculture for research, teaching and agricultural management (in government and private industry);

Two-year technical agriculture institutes: associate degrees and special workshops for up-dating and up-grading the technical and mid-management level personnel in agriculture, agribusiness and industry;

Vocational agriculture schools: senior middle school level programs adapted to the community areas to prepare present and prospective farmers and basic agriculture workers for entrance and advancement; instruction for full-time students, young and adult farmers;

Junior middle schools in rural areas with elective curricula in agricultural occupations: career exploration and community understanding.

There should be a planned articulation for outstanding graduates from one level to gain entrance to the next higher level of schooling.

農業教育之體系，應具有若干階層，包括正規的與非正規的兩種型式，提供直接與間接的教育設施，兼籌教學，研究與推廣三種功能，以支持一堅强之農業。

正規的農業教育至少應具有四個階層，每一階層各應具有明顯之目標：

四年制農學院：能獲學士或更高學位；兼及教學，研究與推廣三種功能；培養農業研究，教學與管理等方面之專業人才。

二年制農業專科學校：能獲副學士學位，培養符合時代要求之中級技術及管理人才，以應農業，農企業及工業方面之需要。

農業職業學校：高中階段之教育，配合當地之需要，培養未來農民及農業基層工作人員，除對學生之教學工作外，並對青年及成年農民實施在職訓練。

國民中學：農業選修課程之開設，應以職業之試探，鄉區之認識等爲教學目的。

應制訂辦法，使某一階段學校之優秀畢業生，能逐步晉升至較高階段之學校。

The extension function, for non-formal educational services to the producers of food and fiber, should be conducted through both the farmer associations and the community-based vocational agriculture programs. Strong program relationships should be developed between the schools which have the focus on education and the extension units in the farmer associations which also have focus on education. The extension activities from the higher level units of education, government and industry should be supplemental to the work of the above mentioned units.

The research in agriculture should be conducted so that it contributes not only to the development of new knowledge and solution of current problems in agriculture but also to the direct development of agricultural leadership. The researchers should be involved in the in-service education programs for teachers of agriculture in the junior colleges (technical agriculture institutes), vocational agriculture programs, and agricultural extension services.

對實際從事動植物生產者之推廣教育工作，應由各級農會及位於鄉區之農業學校主其事。農校與農會推廣單位之間，應爲共同之教育目標訂定密切連繫方案。高階層教育，政府及工業界各單位之推廣活動，應對上述工作予以輔導及支持。

農業研究工作應予推動，因其不但發展農業新知，解決當前問題，且有助於農業領導力之發展。研究人員應致力於農業專科學校農科教師之在職訓練計畫，農職教育及農業推廣工作之開展。

A program of agricultural instruction for the "awareness level" of learning should be conducted through the use of radio, television, newspapers, other publications and libraries. Such a program should include at least three target audiences: the producers of food and fiber, to make them aware of new and improved practices, and special problems though marketing and processing; the consumers of food and fiber, to make them aware of the successes and current situations for production and distribution of the agricultural products as well as quality standards; and youth in junior middle schools and their parents, to make them aware of occupations which require agricultural competencies and the opportunities and repuirents for careers in these occupations.

對農業認知層次之學習，應透過無線電、電視、報紙、出版物及圖書館予以實施。施教之對象至少包括三類人物：食物與衣物之生產者，介紹其新的生產方法，產品之處理及市場銷售等問題；食物與衣物之消費者，使其瞭解農產品產製過程，生產與分配之現況，以及產品品質之標準；就讀國中之學生及其家長，使其瞭解農業之作爲以及從事

農業應具備之條件等。

Manpower Need Assessment

人力需求之預估

The need for vocationally and technically educated manpower for agricultural occupations is difficult to ascertain. The usual reports about manpower demand appear to base their data on too few of the occupations for which the middle school and junior college programs are designed to prepare their graduates. The occupations in farming for the production of food and fiber are readily identified and reported. However, the persons who are employed in positions such as veterinarian assistant, junior or senior technicians in agricultural improvement stations, quality control technicians in food canning plants, and both teachers and professors of agriculture are examples of positions which are not usually identified in the data for employment demand in agriculture.

對曾受職業教育及技術教育之農業性職業之人力需求難予確定。一般有關人力需求之報告呈現之數據，在中學及專科教育所能提供之職業類別爲數過少。生產動植物性產品之農業職業均有揭示，但對諸如獸醫助理、農改場各級技術人員、製罐工廠品質管制人員、農科教師及教授等人員之需求數常付闕如。

1. A project should be initiated to identify the occupations in the Republic of China labor force which require agricultural competencies.
2. The purpose of the project would be to strengthen the data available for educational planning in the field of agriculture. The data would be useful for planners in other areas such as agriculture and the Economic Planning Council.
3. The first phase of the project, which might take 12 months to complete, should consist of having a team of experts in agriculture and agricultural education develop a list of all the occupations which require agricultural competencies. The job classification list currently used by the Taiwan Provincial Labor Force Survey and Research Institute provides the basic list of all jobs in the labor force. It will be necessary to develop a definition of agricultural occupations at the outset of the work.
4. The groups which should be involved in this work should include (but not be limited to) the following:

Ministry of the Interior
Ministry of Education
Economic Planning Council
The Joint Commission on Rural Reconstruction
National Youth Commission
Taiwan Provincial Labor Force Survey & Research Institute

(The Department of Agricultural Education, National Chung Hsing University can provide help in defining the problem as it relates to educational planning for vocational and technical education in agriculture.)

5. The pattern used by a national interagency committee in the United States may be helpful in guiding the initial work on this project. A copy of the report from that committee has been left with the Taiwan Provincial Labor Force Survey & Research Institute.

1. 對於農業上人力需求之職業類別應即予以規畫。
2. 此項規畫之目的在提供農業教育設計者有用之數據，該項數據對農業及經濟發展之設計上亦復有用。
3. 由農業及農業教育專家組成之小組，訂定一所有農業性職業之名單以完成第一期規畫。此項工作或需一年之時間。臺灣省勞動力調查研究所採用之職業分類法可作爲藍本。並對何謂農業性職業先予確切之定義。
4. 參與此項工作之機構至少應包括：

內政部
教育部
經濟設計委員會
農村復興聯合委員會
行政院青年輔導委員會
臺灣省勞動力調查研究所

（中興大學農業教育學系可協助農業技職教育方面之研討工作。）

5. 美國內政委員會使用之分類模式可作爲參考 。 該項報告已贈存 勞動力調查研究所。

Technical Agriculture Programs

農業技術教育

The technical agriculture programs conducted by the two institutes (Chiayi and Pingtung) fill an essential manpower development function. The number of two-year technical agriculture institutes should remain at two. There is no indication at the present time for a need to expand the number. Other recommendations are as follows:

農業技術教育之實施，由兩所專科學校負責。對人力之發展，負起主要功能。在目前情況下，二年制農業專科學校應保持兩所。其他之建議事項如下：

1. The purpose of the technical agriculture institutes should be to prepare semi-professional, technical and mid-management personnel, and to provide instruction through short courses and workshops to up-grade and up-date basic agriculture workers.
2. The instructional programs should be designed to meet the needs of agriculture, agribusiness, agricultural industry, and rural development for semi-professional, technical and mid-management personnel. Usually, these programs should be about two years or less in length.
3. The objectives for the technical programs should be more specific in terms of the occupations and clusters of occupations for which each program is designed.
4. The present five-year programs in technical agriculture should be discontinued. (The first three years of instruction in agriculture may be taken through the programs of vocational agriculture which are offered through the senior middle schools.)
5. The present three-year program should be phased out, but the time required for the phase-out may be several years.
6. No four-year technical agriculture institute should be established. The proposed strengthening of the two-year program plus the baccalaureate degree programs available through the four-year colleges of agriculture should provide all of the needed professional, semi-professional, technical and mid-management personnel required.
7. The similar curricula in the two institutes shoule be continued with each institute encouraged to design special problems courses and seminars to best serve the needs of the students and of the industry.
8. The instructional facilities and equipment for on-campus instruction should be strengthened so that students may learn to use the type of equipment commonly available in the industry.
9. The two institutes should cooperate closely, department to department, to coordinate their plans for placement of students in industry as part of the pre-service instruction. Both institutes should continue to view

the entire Taiwan area as the area to be served.

10. The dormitories for students should be sufficient to house at least three-fourths of the students, as one means of achieving the purpose of serving students from the entire Taiwan area.
11. The dormitory facilities for the faculty and staff should be expanded to meet the present and future need of space.
12. Changes should be made in the certification requirements so that teachers who lack the baccalaureate degree but who have outstanding occupational experience may be promoted.
13. Arrangements should be made for admission of some regular students from the outstanding graduates of the senior vocational agriculture programs.
14. Special workshops and conferences should be conducted to assist with the implementation of government agricultural policies and for the upgrading of agricultural workers.
15. The examination system for entrance into junior colleges (including agriculture) should be changed to eliminate the bias in favor of girls, especially for agricultural curricula since employment opportunities in agriculture are quite limited for girls. (At the same time, efforts to eliminate the bias toward employment of women in agricultoral occupations should be continued.)

1. 農業專科學校之敎學目標應爲培養中級技術及管理人才，並依短期課程及研討方式以傳習現代化之知識與技能。
2. 其課程之設計應以對培養從事農業、農企業、農產工業以及農村發展之中級技術及管理人才爲目標。
3. 各科敎學目標應使與設科之目標職業或職群配合，而具有明顯之標的。
4. 農專五年制部分應不再繼續 （五年制前三年之農業學科敎學，可由農業職校承擔。）
5. 農專現行之三年制應停止辦理，但似非短時期内可實現者。
6. 四年制之農業技術學院不宜設立，以二年制之農業專科學校配合四年制大學農學院足數農業方面所需之專業性，半專業性技術及管理人才之需求。
7. 兩所農專現有類同之科別，各應設計對學生及產業所需之專門性課程。
8. 校内敎學設備應予充實，俾使學生就業後對技術操作不感陌生。
9. 兩所農專應密切合作，科際之間對準備學生就業作爲部分敎學之計畫上，予以協調。並應放眼全省作爲服務之對象。

10. 學生宿舍應至少能容納四分之三之學生，作爲農專以服務全省爲目標之手段之一。
11. 教職員宿舍應無擴建以配合現今及未來所需。
12. 教師檢定制度應予修正，俾使不具學位但技術優良之教師有升遷之機會。
13. 訂定優秀之高農畢業生升入農專之辦法。
14. 配合政府之農業政策，應經常為農業工作者舉辦各類研習會。
15. 專科學校招生（包括農專）應取消對女生優容之偏見，尤以農業各科爲然，蓋農業性職業對女性言諸多限制。（同時，應繼續致力於消除女性任職於農業性職業之偏見。）

Vocational Agriculture Progams

農業職業教育

The senior middle school vocational agriculture programs should be readjusted to meet the present-day manpower needs and the manpower needs anticipated in the furture. A greater emphasis should be placed on the education of present and prospective farmers; less emphasis should be placed on the education of vocational workers in the food processing industry and of animal husbandry/veterinary technicians. There should be a stronger emphasis on the preparation for the work of the farm, the farm home and on the work of those who provide agricultural services directly to the farmers. The following are recommendations for strengthening the vocational agriculture programs:

高級農業職業教育應以當前及未來短期的人力需求爲目的而行統整。其重點應置於現在及未來農民之訓練，次應着重食品加工業操作人員及畜牧獸醫技術人員之訓練。對在農場之工作，農家之工作以及直接向農民服務之業者之訓練均屬重要。以下爲對農職教育之各項建議:

1. The vocational agriculture programs should serve persons who are preparing to enter and advance in farming occupations and other basic agricultural jobs; and provide instruction to those already engaged in farming.
2. There should be at least one school with a vocational agriculture program in each hsien and perhaps as many as three schools in some hsiens. The number of vocational agriculture programs should be based on consideration of at least four major factors;

   —the size of the geographical area to be served (with emphasis on the cultivated land and the transportation—communication problems within the area);

—the number of agricultural students to be enrolled in the school;

—the educational services to be provided to farmers; and

—the curricula to be offered in the school.

3. Each school which offers a vocational agriculture program should include three basic curricula plus others depending upon the additional needs of the area for various agriculture and agribusiness specializations. The basic curricula should include:
   a. Agriculture management*
   b. Agricultural machinery
   c. Rural home economics

   The additional curricula, based on specializations within the area to be served, should include:
   a. Food processing
   b. Animal husbandry
   c. Agricultural civil engineering
   d. Sericulture
   e. Forestry

   The present experimental agri-business class should be continued with the general guideline for financing and operating maintained. (See the Suggested Model with Area Adaptation on the next page for use when planning the programs in each county (hsien).

1. 農職教育應以準備從事農業及與農業有關職業之人士爲施教對象，並對已經從農者予以輔導。

2. 每一縣至少應有一所設有農科之學校，某些縣份設有農科之學校已有三所亦不爲多。農業職校（農職學科）之設立應考慮以下列四種因素：

——服務区域之大小（着重區内耕地面積，交通設施等。）

——所能招收之農科學生數。

——對農民所能提供之教育性輔導。

——設科之類別。

---

* Note: At the present time the pay scale and promotion opportunities for governmental employees in basic agriculture positions is noncompetitive with other occupations. Some special incentives may be necessary to encourage students to enroll in this curricum until government personnel policies can be adjusted.

現今農業基層職位之待遇及升遷機會尚不能與其他行業者相埒，應對學生進入農場經營科訂定獎勵辦法以俟政府人事政策之調整。

3. 具有農科之學校應設立三種基本科別，並視當地農業之特質另行增設其他有關科別。基本科別爲：
   a. 農場經營科
   b. 農業機械科
   c. 農村家事科

   視當地需要可予增設之科別應爲：
   a. 食品加工科
   b. 畜牧科
   c. 農業土木科
   d. 蠶桑科
   e. 森林科

   農場經營實驗班應依現行辦法繼續辦理（以縣爲單位之設計工作可依次頁擬議之模式表格作爲參考。）

4. There should be only one class per year per division per school with approximately 25-35 students per class. The adoption of this standard will help focus on quality of instruction; and help maintain a closer balance between manpower needs in agriculture and agribusiness, and the supply of vocationally educated persons.

5. The vocational agriculture program should have about 60 percent of its resources used for the regular full-time students and 40 percent for farmer education, both young and adult farmers.

6. The school should have sufficient land for the farm practice and practice related to the other courses in some of the curricula. Approximately 0.1 hectare of land should be available per student in the agricultural management classes, agri-business classes, and young farmer classes. (In other words, if a school enrolls three classes; one per year, in agriculture management with a total of 90 students, there should be approximately 9 hectares of land available for their practice.)

7. The Animal Husbandry and Veterinary Science curriculum should be revised to exclude the veterinary science specialization. (The agriculture institutes can more appropriately teach this area for conditions which now prevail in the 70's.) The curriculum should be based on the work of farmers and basic agriculture workers in the production, management and marketing of livestock.

8. The "joint farming concept", "specialized agricultural production area", and other major concepts for agricultural development should be taught

Suggested Model (With Area Adaptation)
擬議之格式　（依地區調整）

School: Provincial ______________ School
學校　省立　學校
Location: ______________ Hsien. ______________ Hsieng
校址　縣　鄉

Kind of program, curricula and divisions 計畫類別、科別			Year and Number of Classes and Students 年期及班級數與學生人數								Comments 備註
			1st Year 第一學年		2nd Year 第二學年		3rd Year 第三學年		Total 總計		
			Classes 班級數	Stu. 學生數	Classes 班級數	Stu. 學生數	Classes 班級數	Stu. 學生數	Classes 班級數	Stu. 學生數	
Regular students 正規班學生	Basic Curricula 基本科別	Agricultural management 農場經營	1	30	1	30	1	30	3	90	0.5—1.0 hectares per class (每班實習用地公頃數)
		Agricultural machinery 農業機械	1	30	1	30	1	30	3	90	
		Rural home economics 農村家事	1	30	1	30	1	30	3	90	
	Curricula for Spec. Agriculture Area 專設科別	a.									
		b.									
		c.									
		Sub-total 小計									
Farmer Education* 農民教育	Basic 基本班	Young farmer class 青年農民班	1	20	1	20	—	—	2	40	1.0—2.0 hectares per class (每班實習用地公頃數)
		Farm management class 農場經營班	1	25	1	25	1	25	3	75	Cooperate with university for record analysis 與大學合作分析資料
	Adapted to Agr. of Area 特殊班	Short courses 短期訓練									
		a.									
		b.									
		c.									
		Sub Total 小計									

* To be conducted in cooperation with Farmer Associations and Provincial Department of Agriculture and Forestry. 與農林廳及農會合作辦理

through both theory and practice under the direction of the teachers in the vocational agriculture program. In addition, students should learn the fundamentals for strong farmer associations, through the development of a "mini" farmers association for the school farm operations.

9. The farmer education program should include:

—continuation and expansion of the present experimental young farmer classes;

—continuation and expansion of the agricultural machinery training program;

—develop a new instructional program for teaching farm management through the use of farm records. (The long-time PDAF farm record keeping project should be the foundation for this new instructional program), and

—other short courses and training programs to meet the needs of the producers for new information, knowledge, and skills.

4. 各校每一科別每一年級均以招生一班爲宜。每班二五～三五人。維持此一標準爲使教學之績效增高，並使農業基層人才之供求與需要量配合。

5. 農業職校應以其人力，物力之百分之六十用於正規的教學，百分之四十用於對青年及成年農民之施教。

6. 學校應有足够之土地以供農場實習及其他需要實習用地之學科實習。農場經營科及農場經營實驗班等科別學生，每人約需〇・一公頃之土地以供實習（例如某校農場經營科三班，共九十名學生，即需約九公頃之土地。）

7. 畜牧獸醫科應將獸醫部分取消（獸醫課程現今均已提高至大專程度）。畜牧方面之課程應以農民，農業基層工作人員在生產、管理及市場銷售等所需要之程度爲準。

8. "共同栽培"，"農業生產專業區" 以及其他有關農業發展上之新觀念，新作法均應由農科教師在理論與實踐兩方面對學生予以闡釋。此外，學生亦須使其瞭解農會之功能，或經由學校農場作業摹擬一小型農會之營運。

9. 對農民之施教應包括:

——繼續並擴大辦理農場經營實驗班。

——繼續並擴大辦理農業機械訓練計畫。

——利用農家记帳资料發展新的農場管理講習計劃。（使用農林廳長期從事之農家记帳资料作爲基本教學资料。）

——其他能增加農業生產者知識、技能之各種短期訓練。

10. There should be systematic industry-school cooperation for the third year students with emphasis on planned and supervised occupational experiences which are both educationally sound for the student and economically sound for the employers. (The National Youth Commission already offers some assistance for the development of cooperation with industry.)

11. All of the schools should have dormitory space for vocational agriculture students. This is especially critical for schools which have curricula to serve students from widely dispersed areas such as the following examples:
    Provincial Jenai Vocational Agriculture School: Mountain students
    Provincial Neipu Vocational Agriculture and Industry School: Mountain students
    Provincial Tahu Vocational Agriculture and Industry School: Sericulture curriculum

    In general, the schools should have dormitory space for approximately 3/4ths of the students, except in special cases, like the three examples given above. In those instances, dormitory space must be provided for all of the students.

12. The school should continue and expand the cooperation with the farmer associations for selection of students for the young farmer and agribusiness classes, and for conducting farmer training classes. The cooperation arrangements should be developed by PDE in cooperation with PDAF, PFA and local agency representatives.

13. The 4-H club program should be strengthened through closer coordination with classroom instruction. The requirement in the new curriculum for more time in farm practice should provide a logical basis for use of the 4-H projects in conjunction with instruction.

14. The special Dairy Cow Management classes would be more desirable as part of special programs in the two agriculture institutes than as part of the senior high school programs.

10. 對三年級學生應實施有系統之建教合作計畫。此項對增加就業經驗計畫之實施，對學生及雇主各有其教育上及經濟上之意義。（行政院青年輔導委員會對建教合作之安排曾多所協助。）

11. 所有各校均應供應農科學生宿舍。對於就讀學生來自全省各地之學校尤有需要。如招收山地學生之仁愛農校、內埔農工及設置蠶科之大湖農工。

一般言，學校應使全部學生之四分之三均能住校，對上列特殊情況者，全部學生均應住校。

12. 學校應繼續並擴大與農會合作，辦理甄選學生以進入農場經營實驗班並辦理農民訓練。並透過教育廳與農林廳，省農會及地方機關之協調再予充實。
13. 四健會作業應配合教學予以加強。新課程標準規定實習時數增多，則利用四健會作業以融通各項實習提供合理之基礎。
14. 乳牛經營班以由兩所農專辦理爲宜。

Agricultural Program in Junior Middle Schools

國民中學之農業課程

The career education program in agriculture in the junior middle schools should be continued. The following recommendations have been made for the purpose of strengthening the program:

1. The primary purpose of the agricultural courses in the junior middle school should be orientation and exploration in agricultural occupations.
2. All junior middle schools which serve students from rural areas should be strongly encouraged to offer the elective agricultural courses with adaptation to the agriculture of the school area.
3. The schools should have some land for student practice supplemented by the community resources such as farms, food processing factories, district agricultural improvement stations, and commercial livestock farms.
4. The agricultural courses should be taught by persons who have either a major or at least a minor, in an agricultural field.
5. Special in-service programs should be conducted to get the junior middle school teachers of agriculture to review and revise existing curricular materials and to develop new supplemental materials for enriching the instructional program.
6. Provision should be made in the calculation of "teachers-load" for the supervision of student practice.
7. There should be a budget for the necessary materials and supplies for student practice.

國民中學之農業職業選修課程應續行開設，下列各項爲對是項課程之建議:

1. 國民中學之農業課程應[illegible]對農業職業之啓發性與試探性者。
2. 有來自農村子弟就讀之各國民中學，均應配合當地區農業特質積極鼓勵其設置農業課程。
3. 學校應具有適當之土地以供學生實習，並由當地之社會資源如農場、食品工廠、農業改良場、企業化牧場等予以支援。
4. 擔任農業學科教學之教師，應係農業系科或至少係農業相關系科畢業者。
5. 對農業學科教師舉辦在職訓練，增補並更新其教材以加强其教學。
6. 爲加强對學生實習之輔導，教師任課時數之計算方法應重新予以訂定。
7. 應寬籌經費以充實學生實習所需之各項設備。

Teacher Education in Agriculture

農業師資教育

The two key elements in any vacational and technical education program are the teachers and the students. With competent, motivated teachers who know how to direct the learning of students through "practice" and "practical activities" there can be effective instruction for students. The following recommendations are focused on the preparation of new teachers and on assistance to teachers in service. The recommendations are directed primarily to National Chung Hsing University which has a program for teachers of agriculture and to the relevant related agencies.

教師與學生爲任一農業職業學校及專科學校兩種基本要素。教師具有能力、活力並通曉如何指導學生透過實習及各種實際的活動以學習，對教學必有極大之績效。下列各項建議乃針對新進教師之儲訓，及對教師教學之協助等方面。並側重設有農業師資教育系組之中興大學及其他有關機構。

1. The program should include four main areas of work: pre-service, in-service, research, and instructional materials.
2. The program should serve three groups of educators:
   a. Teachers of agriculture: junior middle schools, senior middle schools and technical agriculture institutes;
   b. Administrators of vocational agriculture programs: school principals, deans of study, deans of practice, and division (department) heads; and
   c. Extension workers in townships and counties.

3. The pre-service program should prepare persons to teach agriculture in junior middle schools, senior middle schools, technical agriculture institutes, and for extension work through the schools, farmer associations and other agencies. (Note: At the present time few graduates from colleges of agriculture take employment in agricultural extension positions at less than the Provincial level.)

   Students in the College of Agricultural departments other than Agricultural Education should be expected to complete the same requirements *in professional education* for certification as students enrolled in the Department of Agricultural Education.

4. The Department of Agricultural Education should coordinate the planning and conducting of a program of in-service work for teachers and administrators of agricultural education programs. The program should give emphasis to both professional education and technical agriculture to keep the personnel up-to-date.

5. The research program in agricultural teacher education should include status studies about present programs, and curriculum studies to keep the curricula current with occupational demands and career advancement opportunities.

6. Instructional materials should be developed to make the work of teachers and extension educators as effective as possible. The materials should be developed in relation to the current curriculum and program emphases. In the immediate future a high priority should be placed on materials for use by teachers to make the student practice time and student laboratory time more effective for development of both "doing skills" and "understanding why".

1. 農教師資之儲訓應包括：職前訓練、在職訓練、研究發展以及教材教具等四方面。

2. 下列三類教育工作者應爲儲訓之對象：
   a、農業學科教師：國民中學、高級中學及農業專科學校。
   b、農職教育行政人員：校長、教務主任、實習主任及科主任。
   c、鄉鎮農會推廣人員。

3. 職前儲訓計畫爲培養在國民中學，高級中學及農業專科學校擔任農業學科教學並能與學校，各級農會及其他有關機構配合從事推廣業務之人士。（現階段大學農學院畢業生服務於省級以下推廣機構者甚少。）

大學農學院除農業教育學系外，其他各學系學生，有意從事教學者，應一如農教系使其接受教育專業訓練以期獲得任教資格。

4. 農業教育學系應協調有關機關從事農科教師之在職訓練，包括教育及農業兩方面能配合當前需要之專業訓練。

5. 研究發展方面應包括一般現況以及各科課程之研究，期使能與就業需要及職業領域之擴展予以配合。

6. 教學設備應配合教學重點及推廣業務予以充實。近期内對教師在教學及實習上能使學生加强其認知與技能之各種設備應置於優先充實之地位。

7. The students who plan to become teachers of vocational and/or technical agriculture should have recent and relevant occupational experience in agriculture.

8. The present faculty in the Department of Agricultural Education should be strengthened by the addition of at least one person with the doctorate for assignment in the agricultural education teaching and research areas.

9. A masters degree program should be developed to meet the need for preparation of agricultural education leaders in the schools and in the non-formal agricultural education programs.

10. The Division of Agricultural Machinery, Department of Agricultural Education has a curriculum which is not limited to the preparation of teachers of agricultural mechanics but has two other goals: preparation of professional workers in the agricultural mahinery field and development of new types of farm machinery adapted to the conditions of agriculture in Taiwan. Because of the three goals, and because the graduates from this division have a good record of work performance in the area of agricultural machinery in Taiwan, consideration should be given to establishing this as a separate department.

11. If the recommendation for expansion of the rural home economics program is accepted, then the home economics teacher education program at National Chung Hsing University should be strengthened *or* arrangements should be made with National Normal University to offer some special courses to their home economics students to prepare them for teaching in the rural areas. (For example two such courses might be: The curriculum and Teaching Material for VA education; and Rural Sociology).

12. The Department of Agricultural Education should be asked to develop a pilot project for a competency based professional education program. (One example of some research conducted in this area is: *Competencies needed by students in agriculture and natural resources education prior to student teaching* by Dr. Raymond A. Garner, Michigan State University, Professional Series in Agricultural Education, No. 4, August 1974.)

13. The Departmet of Agricultual Educaion, National Chung Hsing University, should continue to have provisions to admit outstanding senior vocational agriculture graduates. An additional criterion of "farm background or eperience in other agricultural occupations" should be added to the selection procedures.

7. 欲行充任農校或農專教師之學生，應具有現代的及有關的農事經驗。

8. 農業教育學系之師資應予加強，至少應增加具有博士學位者一人，從事農業教育之教學及研究工作。

9. 開設碩士班以培養學校中有關農業教育之領導人才。

10. 農業教育學系之農業機械組除培養農校農機科之教師外，尚有其他兩項目標，即培養農業機械專業人才及研究發展適合本省需要之農業機械，由於此三項目標以及該組畢業生過去優良之表現，應考慮使之單獨設系。

11. 如確認農村家事有發展之必要，則中興大學農村家政教學應行擴充並加強，或與國立臺灣師範大學配合，設計若干需要之課程，使畢業學生能在農村中任教。（農職教育之課程與教材，鄉村社會學等均為可以開設之課程。）

12. 農業教育學系應行發展以能力為基準之示範性專業教學計畫（參考資料之一為：R. A. Garner 著：農業與自然資源教育系學生在試教前應具備之能力，美國密西根州立大學農業教育叢刊，第四期，一九七四年八月。）

13. 中興大學農業教育學系應繼續依規定之甄試辦法，接納高農優秀畢業生，並應在辦法中增加學生應具有農事背景，或曾從事農業性工作等之規定。

Administration and Supervision

行政與輔導

The Ministry of Education and the Provincial Department of Education must have some direct responsibility for helping implement the plans for economic development. Currently the responsibility for implementation of the plans include several agencies and organizations at the national, provincial and county levels. The MOE and PDE are not directly included. (See diagram on page 13.) It is recommended that both the Ministry of Education and the Provincial Department of Education be included in the implementation system, as shown in Figure 13.

The inclusion of the MOE and PDE should enhance the educational planning but should not infringe upon the educational freedom of the educational institutions. The proposed arrangement should be useful for insuring that the institutional capabilities for education are utilized and that the teaching staff and facilities are keeping up-to-date for modernizing agriculture.

教育部及教育廳對協助完成經濟發展之計畫，亦應負有若干直接任務。現今經濟計畫之制定包括各階層有關機構，教育機關不直接參與（參閱 13 頁），但教育部、廳實應包括在經濟之設計體系中（如圖 13）。

爲此，教育部及教育廳應加强其教育計畫但不應侵及學術自由。此種擬議之安排將能充分發揮教育之功能，並促使學校之人力、物力爲農業之現代化而日趨更新。

The following additional recommendations have been made for the purpose of strengthening the vocational and technical agriculture programs:

1. A coordinating committee on vocational and technical education in agriculture should be established at the Provincial level. The purposes of this committee would be to (a) provide a means of *communication* among the agencies responsible for educational and agricultural programs, (b) provide a means for review of plans to achieve *coordination* of agency efforts, and (c) provide a means for *cooperation* in planning and implementation of plans dealing with agriculture and rural development.
2. The staffing pattern within Section III, Provincial Department of Education should be changed to provide professional staff to deal with agricultural education (and staff to deal with the other occupational areas). The main areas of responsibility should include (but not be limited to):
   a. Supervision of programs, including inservice education.
   b. Coordination with agencies responsible for agriculture programs.
   c. Planning for adaption of the programs to match new agricultural policies and priorities.
3. The fees for practice materials in the vocational and technical agriculture program should be adjusted according to the curriculum and the costs of materials.

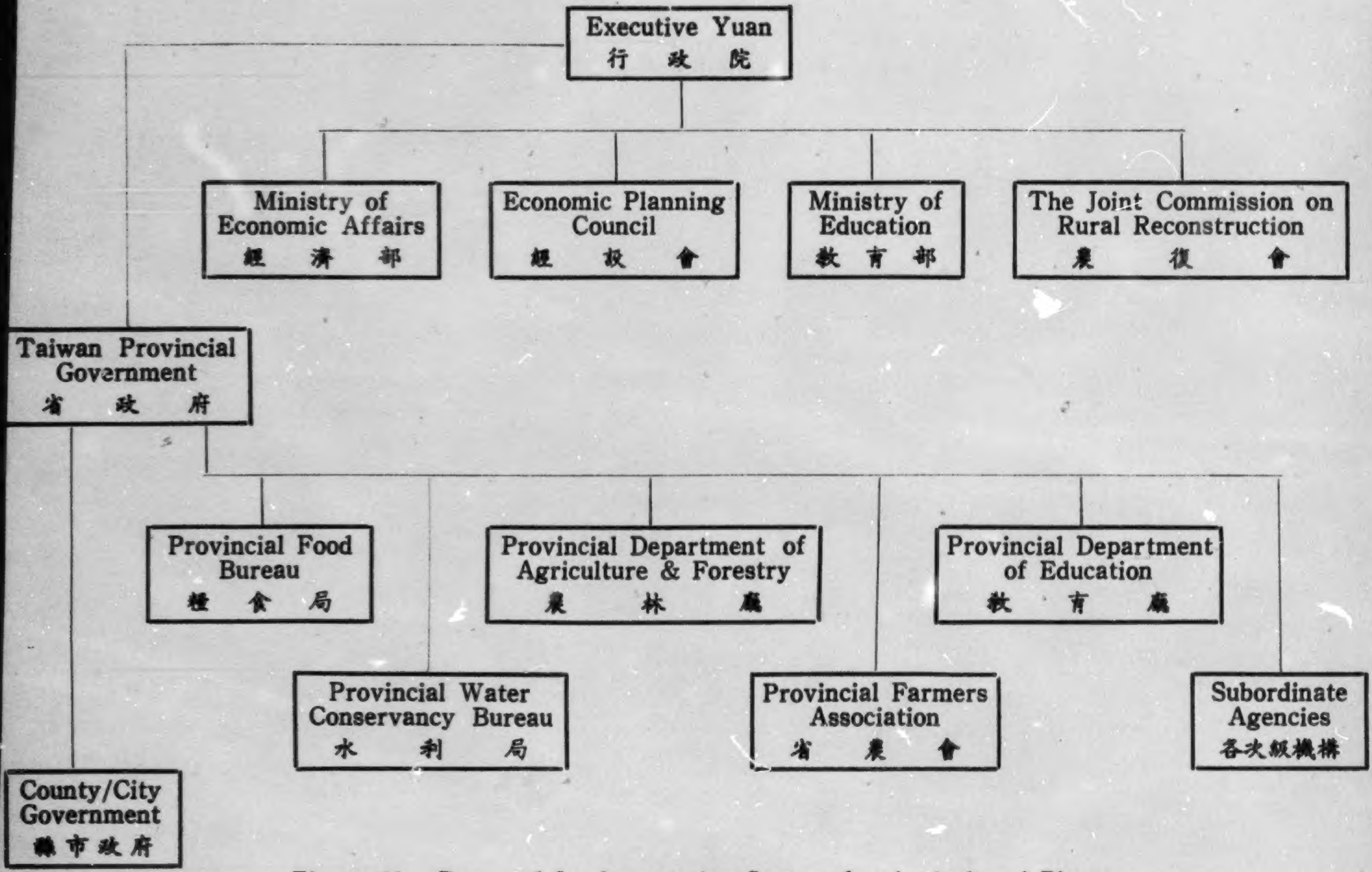

Executive Yuan
行　政　院
Ministry of Economic Affairs
經　濟　部
Economic Planning Council
經　設　會
Ministry of Education
教　育　部
The Joint Commission on Rural Reconstruction
農　復　會
Taiwan Provincial Government
省　政　府
Provincial Food Bureau
糧　食　局
Provincial Department of Agriculture & Forestry
農　林　廳
Provincial Department of Education
教　育　廳
Provincial Water Conservancy Bureau
水　利　局
Provincial Farmers Association
省　農　會
Subordinate Agencies
各次級機構
County/City Government
縣市政府

Figure 13. Proposed Implementation System for Agricultural Plans

圖 13. 擬議之農業發展計畫設計系統

4. The equipment for the agricultural curricula in the schools and institutes should be up-graded to meet the standard of the industry which is to be served by the curricula. For example, the Provincial Tahu VA&I school with the sericulture curriculum should have modern equipment for teaching the silkworm production and silk processing. The technical agriculture institutes should have the modern equipment for food processing, including the newer area of freezing.

5. The guidance, counseling and placement of vocational and technical agriculture students (graduates) must be strengthened. The new position, Dean of Practice, in the vocational programs appears to be an excellent addition to the administrative structure in the schools. Provision should be made for in-service to the Deans of Practice to further refine the description of their duties and to develop guidelines for the placement of students in industry for occupational experience.

6. The work of the National Youth Commission should continue to be utilized to strengthen the school-industry relationships and to coordinate the placement of graduates.

對農業職業及技術教育之加强，復作以下之各項建議:

1. 建立一省級階層對農業職業及技術教育之協調委員會。旨在: (a)提供溝通教育機關與農業機之途徑。(b)提供檢討各種計畫以達成協調各項工作之方法，及(c)提供在計畫及執行農業與農村發展之合作方法。

2. 教育廳第三科應有主管農業教育之專業人員（及主管他類職業教育之專業人員)。其職掌至少應包括:
   a、行政上之監督，包括在職訓練。
   b、與農業教育有關各機關之協調工作。
   c、配合當前農業政策，調整農業教育並安排實施順序之計畫工作。

3. 農業職業學校及專科學校之實習材料費，應依照科目之性質以及所需材料之價格予以適時的調整。

4. 農業職業學校及專科學校各科實習所需之設備應予更新，以達畢業生未來服務之企業界之標準。例如大湖農工職校之蠶桑科，應擁有現代化之養蠶及繅絲之教學設備，農專應有新式之食品加工設備，包括加工方面新領域之冷凍設備。

5. 農校及農專畢業生就業輔導工作應予加强，農校設置實習主任統籌實習業務爲一良好之安排。實習主任職掌應予明確規定，並制訂發展建教合作之辦法。

6. 行政院青年輔導委員會之工作應繼續推行，以加强學校與企業界之關係，以及協調畢業生之安置。

BIBLIOGRAPHY

(Numbered)

1. Shen, T. H. (editor). *Agriculture's place in the strategy of development: the Taiwan experience.* Taipei: Joint Commission on Rural Reconstruction, July 1974, 436 pp.

2. *The Republic of China's sixth four-year plan for economic development of Taiwan, 1973-1976.* Taipei: Executive Yuan, Economic Planning Council, January 1974, 246 pp.

3. Taiwan Provincial Labor Force Survey and Research Institute. *Quarterly report on the labor force survey in Taiwan, Republic of China, Number 46.* Taipei: Taiwan Provincial Labor Force Survey and Research Institute, January 1975.

4. Ministry of Education. *Education and manpower planning in the Republic of China.* Taipi: Ministry of Education, 1975, 107 pp. (English and Chinese)

5. Ministry of Education. *Education in the Republic of China.* Taipei: Ministry of Education, 1974, 48 pp.

6. Ministry of Education. *Vocational agriculture school curriculum.* Taipei: Ministry of Education, February 1974, 585 pp. (In Chinese)

7. Ministry of Education. *Report of the Committee to improve the plan for agricultural educators.* Taipei: Ministry of Education, October, 1975, 62 pp. plus tables and figures. (In Chinese)

8. Coombs, Philip H. and Manzoor Ahmed. *Attacking rural poverty: how non-formal education can help.* Baltimore: The Johns Hopkins University Press, 1974, 292 pp.

9. Brembeck, Cole S. and Timothy J. Thompson (compilers). *New strategies for educational development: the cross-cultural search for non-formal alternatives.* Lexington, Massachusetts: Lexington Books, D. C. Heath and Company, 1973, 219 pp.

10. Ministry of Education. *Long-range plan for education in the Republic of China,* 1964-1980. Taipei: Ministry of Education, Republic of China, 1965, 368 pp.

11. Commission on Agricultural and Fishery Census. *The report of 1970 Agricultural Census of Taiwan-Fukien District of The Republic of China, Volume I: Analytic description and summary extract tables.* Taipei: The Committee on Agricultural and Fishery Censuses, Executive Yuan, 1973, 463 pp., plus appendices.

12. Combined Entrance Examination Committee. *A research report on the combined entrance examination, 63 (1974).* Taichung, Taiwan: Combined Entrance Examination Committee of Taichung V-A, Taichung V-I, Taichung Vocational Homemaking and Commercial, and Taichung Vocational Nursing Schools, January 64 (1975), 60 pp. (In Chinese)

13. *Educational statistics of Taiwan Province, 1975.* Taichung, Taiwan: Taiwan Provincial Government, Department of Education, 1975, 236 pp.

14. Provincial Department of Education. "Agricultural education in Taiwan Province." (A special briefing paper prepared by Third Division, Taiwan Provincial Department of Education, Republic of China, March 6, 1975, 8 pp.)

15. *Report on 1974 school year examination for three-year junior colleges,* 119 pp. (In Chinese)

APPENDICES

附　　錄

APPENDIX A

Data Collected from Survey of Taiwan Schools with Vocational and Technical Agriculture Curricula, March-May, 1975

六十四年三～五月調查獲取農業職業及專科學校之各項資料

Table 1. Enrollment by Curriculm, Year in School, and Sex in Taiwan Vocational Agriculture Programs, 1974-75.

農業職業學校各科依年級性別區分之學生人數（六十三學年度）

Table 2. Curriculum and Hours of Instruction for Experimental Farm Management Class.

農場經營實驗班課程及教學時數

Table 3. Enrollment by Curriculum and Kind of Agricultural Program at Chiayi and Pingtung Technical Institutes, 1974-75.

屏東及嘉義農業專科學校依制別科別區分之學生人數（六十三學年度）

Table 4. Comparison of Courses and Credits in Agronomy Curricula at Taiwan Agricultural Institutes, 1974-75.

農業專科學校農藝科各制別學科學分數之比較（六十三學年度）

Table 5. Number of Graduates by Type of Agricultural Curricula and Level of Schooling in Taiwan for Five Selected Years.

各階段農業校院各科系在五個選定年期之畢業生人數

Table 6. Enrollment by Curriculum, Year in School and Sex in Taiwan Technical Agriculture Programs, 1974-75.

農業專科學校各科依年級性別區分之學生人數（六十三學年度）

APPENDIX A

Table 1. Enrollment by Curriculum, Year in School, and Sex in Taiwan Vocational Agriculture Programs, 1974-75.

表 1. 農業職業學校各科依年級性別區分之學生人數（六十三學年度）

Curriculum 科　別	Year in School 年級								
	1		2		3		Total 合計		Total 總計
	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	
Farm Business 農業經營	678	35	36	0	16	0	730	35	765
Comprehensive Agriculture 綜合農業	26	10	111	0	166	0	303	10	313
Agronomy 農藝	0	0	141	0	225	0	366	0	366
Horticulture 園藝	15	8	150	132	195	151	360	291	651
Agricultural Extension 農業推廣	0	0	0	0	20	0	20	0	20
Farm Business 農業經營 (Experimental) (實驗班)	35	8	14	0	28	0	97	8	105
Forestry 森林	225	0	172	0	182	0	579	0	579
Food Processing 食品加工	629	335	594	170	622	156	1845	661	2506
Ani. Husb. & Vet. 畜牧獸醫	797	0	614	0	814	0	2225	0	2225
Agric. Civil Engr. 農業土木	234	0	176	0	248	0	658	0	658
Farm Mechanics 農業機械	i98	0	660	0	617	0	2075	0	2075
Sericulture 蠶桑	35	41	34	30	8	12	79	83	162
Homemaking 農村家事	0	618	0	434	0	613	0	1665	1665
Total 總計	3494	1055	2702	766	3141	932	9337	2753	12080

Source: Reports from schools

APPENDIX A

Table 2. Curriculum and Hours of Instruction for Experimental Farm Management Class.

表 2. 農場經營實驗班課程及教學時數

Subjects 科目	Hours per week 每週授課時數								NOTES 備註
	First Year 第一年				Second Year 第二年				
	1st Sem 第一學期	Winter Vac. 寒假中	2nd Sem 第二學期	Summer Vac. 暑假中	1st Sem 第一學期	Winter Vac. 寒假中	2nd Sem 第二學期	Summer Vac. 暑假中	
Farm Machinery 農業機械	3	5	3	5	3	5	3	5	1
Agronomy 農藝	3	5	3	5	3	5	3	5	2
Animal Husbandry 畜牧	3	5	3	5	3	5	3	5	2
Horticulture 園藝	3	5	3	5	3	5	3	5	3
Food Processing 食品加工					2	5	2	5	3
Farm Business 農業經營					2	3	2	3	
Soils & Fertilizers 土壤肥料		4		4					4
Disease & Insect Control 作物病蟲害		4		4					
Farm Practice 農場實習	9	9	9	9	9	9	9	9	
Sub-Total 小計	21	37	21	37	25	37	25	37	
San Min Chu I 三民主義					2		2		
Citizenship 公民	2		2						
Chinese 國文	5		5		5		5		
Foreign Language 英文	2		2		3		2		
Military Training 軍訓	3		3		2		3		
Physical Education 體育	1	1	1	1	1	1	1	1	
Biology 生物	2		2						
Chemistry 化學	2		2						
Sub-Total 小計	17	1	17	1	13	1	13	1	
TOTAL 總計	38	38	38	38	38	38	38	38	

Notes 1. Regular Semester: 1/3 lecture. 2/3 practice; Vacation: 1/5 lecture. 4/5 practice
學期中講授佔三分之一，實習佔三分之二，假期中講授佔五分之一，實習佔五分之四
2. Regular Semester: 2/5 lecture. 3/5 practice; Vacation: 1/5 lecture. 4/5 practice
學期中講授佔五分之二，實習佔五分之三，假期中講授佔五分之一，實習佔五分之四
3. Regular Semester: 1/2 lecture. 1/2 practice; Vacation: 2/5 lecture. 3/5 practice
學期中講授佔二分之一，實習佔二分之一，假期中講授佔五分之二，實習佔五分之三
4. Vacation: 1/2 lecture. 1/2 practice 假期中講授及實習各佔二分之一

APPENDIX A

Table 3. Enrollment by Curriculum and Kind of Agricultural Program at Chiayi and Pingtung Technical Institutes, 1974-75.

表 3. 屏東及嘉義農業專科學校依制別科別區分之學生人數（六十三學年度）

Curricula 科別	Number of Students 學生人數					Total 總計
	Chiayi 嘉義農專		Pingtung 屏東農專			
	Five year Regular 五年制 日間部	Two-Year Evening 二年制 夜間部	Five-Year Regular 五年制 日間部	Three-Year 三年制 Regular 日間部	Three-Year 三年制 Evening 夜間部	
Agronomy 農藝	166	142	121	127	162	718
Agr. Chemisty 農業化學	—	—	—	89	—	89
Agr. Economics 農業經濟	81	—	—	—	—	81
Ani. Husb. & Vet.* 畜牧獸醫	366	—	—	—	—	366
Ani. Husb. 畜牧	—	—	177	101	—	278
Veterinary 獸醫	—	145	213	119	120	597
Agr. Engineering 農業工程	—	90	—	92	98	280
Farm Machinery 農業機械	—	—	187	108	—	295
Farm Mechanics 農業機械工程	397	—	—	—	—	397
Forestry 森林	289	—	—	—	—	289
Forestry Mgmt. 森林經營(組)	—	—	—	94	—	94
Soil & Water Conser. 水土保持（組）	—	—	—	88	—	88
Horticulture 園藝	171	—	—	25	—	196
Food Processing 食品加工	229	93	—	111	125	558
Total 總計	1699	470	698	954	505	4326

Source: Reports from Institutes at Chiayi and Pingtung

* Separate curricula but reported only as total enrollmet
分設兩組但資料中學生人數未行區分

APPENDIX A

Table 4. Comparison of Courses and Credits in Agronomy Curricula at Taiwan Agricultural Institutes, 1974-75

表 4. 農業專科學校農藝科各制別學科學分數之比較（六十三學年度）

	Evening 夜 間 部		Regular 日 間 部		
	2-Year 二年制 (Chiayi)	3-Year 三年制 (Pingtung)	3-Year 三年制 (Pingtung)	5-Year 五年制 (Chiayi)	5-Year 五年制 (Pingtung)
Dr. Sun Yat-sen Thought 國父思想	2	4	4	4	4
Chinese 國文	6	6	6~8*	30	38
English 英文	6	6	6~8	20	30
History of Modern China 中國近代史	4	4	4	4	4
Introduction to Chinese Culture 中國文化概論	0	0	0	0	4
Constituton 憲法	0	2	2	0	0
Chinese Geography 本國地理	0	0	0	4	4
Civics 公民	0	0	0	4	4
Music 音樂	0	0	0	(1)	1~2
Physical Education 體育	(4)**	(6)	(6)	(10)	(10)
Military Training 軍訓	(4)	(4)	(4)	(8)	(8)
Sub-total 小 計	18	22	18~22	66	89~90
General Chemistry 普通化學	0	3+1***	3+1	6+2	6+2
Organic Chemistry 有機化學	3	2+1	2+1	4+1	6+2
Physics 物理	0	0	0	0	6+2
Mathematics 數學	0	0	0	20+0	30+0
Biology 生物學	0	0	0	4+2	4+2
Botany 植物學	0	3+1	3+1	0	0
Plant Physiology 植物生理學	5+2	3+1	3+1	4+2	4+2
Introduc[illegible] to Agriculture 農業概論	2	4+2	4+0	4+0	4+0
General [illegible]ops 作物學	3	2+1	2+1	4+0	6+0
Agricultural Meteorology 農業氣象	0	2+1	2+1	0	2+0
Soil Conservation 水土保持	0	0	0	0	2+0
Soils & Fertilizers 土壤與肥料	4+2	4+2	4+2	4+1	4+2
Plant Protection 植物保護	4+2	0	0	4+4	0
Plant Pathology 植物病理學	0	3+1	3+1	0	3+1
Agricultural Entomology 農業昆蟲學	0	3+1	3+1	0	3+1
Genetics 遺傳學	0	3+1	3+1	6+2	6+2
Genetics & Plant Breeding 遺傳與作物育種	5+2	0	0	0	0
Special Crops 特用作物	5+2	2+1	2+1	6+4	4+2
Horticulture 園藝	0	2+1	2+1	0	0
Food Crops 食用作物	5+2	2+1	2+1	6+4	4+2
Biometry and Design of Exp. 生物統計與試驗設計	3+1	0	0	0	0
Biometry 生物統計	0	2+1	2+1	3+2	3+1
Agricultural Economics 農業經濟	2	3+0	3+0	0	3+0
Plant Breeding 作物育種	0	3+1	3+1	6+2	6+2
Agricultural Machinery 農業機械	2+2	2+1	2+2	6+4	4+2
Design Experiments 試驗設計	0	2+1	2+1	3+2	3+1
Agricultural Technique Seminar 農業技術研習	0	3	3	0	0
Farm Management 農場管理	2	0	0	0	3+0
Farm Practice 農場實習	0+2	0+3	0+4	0+10	0+10
Sub-total 小 計	44+18	53+23	55+23	90+42	116+38
Electives 選修科目	2~12	22	8~24	42	(20~32)
Total 總 計	82~94	120	102~122	240	243~244

Source: Reports from Institutes at Chiayi and Pingtung

* Variable amount of credit 六或八學分

** ( ) Credit not counted toward graduation credits 學分在畢業成績中不予列計

*** Three credits for lecture plus one credit from laboratory/practice 講授三學分實習一學分

APPENDIX A

Table 5. Number of Graduates by Type of Agricultural Curricula and Level of Schooling in Taiwan, for Five Selected Years

表 5. 各階段農業校院各科系在五個選定年期之畢業生人數

Kind of Curricula 科系別	Level of Schooling 學階別	Number of Graduates 畢業生人數				
		1955 四十四年	1960 四十九年	1965 五十四年	1970 五十九年	1974 六十三年
Crop and Soil Sciences 農藝	Voc. School 農職	826	1639	2971	2216	699
	Agr. Institute 農專	0	46	59	133	149
	College/Univ. 農院	192	230	329	408	345
	Sub-Total 小計	1018	1915	3359	2757	1193
Horticulture 園藝	Voc. School 農職	57	84	166	359	297
	Agr. Institute 農專	0	0	0	35	38
	College/Univ. 農院	20	51	81	86	79
	Sub-Total 小計	77	135	247	480	414
Animal Husb. and Veterinary Science 畜牧獸醫	Voc. School 農職	274	461	484	722	795
	Agr. Institute 農專	0	36	42	61	117
	College/Univ. 農院	12	32	68	65	54
	Sub-Total 小計	286	529	594	848	966
Farm Mechanics and Agric. Engineering 農業工程	Voc. School 農職	32	33	432	315	618
	Agr. Institute 農專	0	0	21	122	174
	College/Univ. 農院	36	42	32	37	39
	Sub-Total 小計	68	75	485	474	831
Forestry 森林	Voc. School 農職	126	252	220	191	230
	Agr. Institute 農專	0	29	25	79	133
	College/Univ. 農院	49	83	69	81	106
	Sub-Total 小計	175	364	314	351	469
Farm Products Processing 食品加工	Voc. School 農職	88	63	186	546	900
	Agr. Institute 農專	0	0	0	48	176
	College/Univ. 農院	0	0	38	49	89
	Sub-Total 小計	88	63	224	643	1165
Sericulture 蠶桑	Voc. School 農職	0	63	22	17	9
	Agr. Institute 農專	0	0	0	0	0
	College/Univ. 農院	0	0	0	0	0
	Sub-Total 小計	0	63	22	17	9
Agricultural Education & Extension 農業教育與推廣	Voc. School 農職	0	0	0	48	23
	Agr. Institute 農專	0	0	0	0	0
	College/Univ. 農院	0	35	52	58	51
	Sub-Total 小計	0	35	52	106	74
Rural Home Economics & 5-Year Home Ec. 農村家事(含五年制)	Voc. School 農職	0	0	0	771	578
	Agr. Institute 農專	0	0	0	0	0
	College/Univ. 農院	0	0	0	0	0
	Sub-Total 小計	0	0	0	771	578
Total 總計	Voc. School 農職	1403	2595	4481	5185	4149
	Agr. Institute 農專	0	111	147	478	787
	College/Univ. 農院	309	473	669	784	763
	Sub-Total 小計	1712	3179	5297	6447	5699

Source: *Taiwan Educational Statistics* for 1955, 1960, 1965, 1970, and 1974.

Definitions (based on titles of curricula in the schools and colleges):

Crop and Soil Sciences—Includes Comprehensive Agriculture, 5-Year Agriculture, Agronomy, Crop Plantation, Food Production, Agricultural Chemistry, Soil and Fertilizers, Soil and Water Conservation, Plant Pathology, Entomology, Agricultural Economics, and Rural Economics. 包括綜合農業，農藝，農業化學，土壤肥料，水土保持，植物病理，昆蟲，及農業經濟

Animal Husbandry and Veterinary Science—Includes Animal Husbandry, Animal Husbandry and Veterinary, and Veterinary Medicine. 包括畜牧，畜牧獸醫及獸醫

Farm Mechanics and Agricultural Engineering—Includes Agricultural Engineering, Farm Mechanics Factory, Agricultural Machinery, Farm Hydraulics, Irrigation Engineering and Agricultural Civil Engineering. 包括農業工程，農業機械，農田水利，農業土木

Forestry—Includes Forestry, Forestry Soil and Water Conservation, and 5-Year Forestry. 包括森林、森林水土保持及五年制森林

Farm Products Processing—Includes Food Engineering, Farm Products Processing, and Food Science. 包括食品工程、農產加工及食品科學

APPENDIX A

Table 6. Enrollment by Curriculum, Year in School and Sex in Taiwan Technical Agriculture Programs, 1974-75.

表 6. 農業專科學校各科依年級性別區分之學生人數（六十三學年度）

Curriculum 科 別	Year in School 年 級														Total 總計
	1		2		3		4		5		6		Total 合計		
	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	
Agronomy 農藝															
5-Year: Regular 五，日	32	2	41	12	44	8	36	24	79	9	—	—	232	55	287
3-Year: Regular 三，日	27	2	57	5	26	10	—	—	—	—	—	—	110	17	127
Evening 夜	26	22	22	19	25	18	14	16	—	—	—	—	87	75	162
2-Year: Evening 二，夜	53	6	46	7	26	4	—	—	—	—	—	—	125	17	142
Sub-Total 小 計	138	32	166	43	121	40	50	40	79	9	—	—	554	164	718
Horticulture 園藝															
5-Year: Regular 五，日	13	20	13	13	4	22	10	26	19	31	—	—	59	112	171
3-Year: Regular 三，日	24	1	—	—	—	—	—	—	—	—	—	—	24	1	25
Sub Total 小 計	37	21	13	13	4	22	10	26	19	31	—	—	83	113	196
Food Processing 食品加工															
5-Year: Regular 五，日	23	16	33	9	28	19	31	17	34	19	—	—	149	80	229
3-Year: Regular 三，日	25	1	43	1	39	2	—	—	—	—	—	—	107	4	111
Evening 夜	25	13	18	17	14	4	16	16	—	—	—	—	75	50	125
2-Year: Evening 二，夜	18	4	22	17	24	8	|	—	—	—	—	—	64	29	93
Sub-Total 小 計	91	34	116	44	107	33	47	33	34	19	—	—	395	163	558
Forestry 森林															
5-Year: Regular 五，日	34	2	40	0	55	4	65	2	83	4	—	—	277	12	289
Forestry Management 森林經營															
3-Year: Regular 三，日	23	0	32	2	37	0	—	—	—	—	—	—	92	2	94
Soil & Water Consv. 水土保持															
3-Year: Reqular 三，日	25	2	30	2	26	3	—	—	—	—	—	—	81	7	88
Agricultural Chemistry 農業化學															
3-Year: Regular 三，日	17	1	39	1	28	3	—	—	—	—	—	—	84	5	89
Ani. Husb. & Vetern. 畜牧獸醫															
5-Year: Regular 五，日	68	2	63	2	61	9	66	2	87	6	—	—	345	21	366

Curriculum 科 別	Year in School 年 級														Total 總 計
	1		2		3		4		5		6		Total 合計		
	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	Male 男生	Female 女生	
Animal Husbandry 畜牧															
5-Year: Regular 五，日	30	3	27	9	21	3	24	8	44	8	—	—	146	31	177
3-Year: Regular 三，日	23	0	40	2	33	3	—	—	—	—	—	—	96	5	101
Sub-Total 小 計	53	3	67	11	54	6	24	8	44	8	—	—	242	36	278
Veterinary 獸醫															
5-Year: Regular 五，日	34	4	29	0	34	3	25	0	37	2	45	0	204	9	213
3-Year: Regular 三，日	25	0	36	0	32	2	23	1	—	—	—	—	116	3	119
Evening 夜	33	9	13	0	28	3	15	1	14	4	—	—	103	17	120
2-Year: Evening 二，夜	40	3	41	2	38	2	19	0	—	—	—	—	138	7	145
Sub-Total 小 計	132	16	119	2	132	10	82	2	51	6	45	0	561	36	597
Agricultural Engineering 農業工程															
3-Year: Regular 三，日	30	0	27	1	31	3	—	—	—	—	—	—	88	4	92
Evening 夜	23	2	22	4	15	2	30	0	—	—	—	—	90	8	98
2-Year: Evening 二，夜	23	0	31	4	32	0	—	—	—	—	—	—	86	4	90
Sub-Total 小 計	76	2	80	9	78	5	30	0	—	—	—	—	264	16	280
Farm Machinery 農業機械															
5-Year: Regular 五，日	36	0	28	0	30	0	39	0	54	0	—	—	187	0	187
3-Year: Regular 三，日	32	0	33	0	43	0	—	—	—	—	—	—	108	0	108
Sub-Total 小 計	68	0	61	0	73	0	39	0	54	0	—	—	295	0	295
Farm Mechanics 農業機械工程															
5-Year: Regular 五，日	71	1	62	3	81	3	76	5	92	3	—	—	382	15	397
Agricultural Economics 農業經濟															
5-Year: Regular 五，日	21	16	226	18	—	—	—	—	—	—	—	—	47	34	81
Total 總 計	854	132	914	150	857	138	489	118	543	86	45	0	3702	624	4326

Source: Reports from the Institutes

APPENDIX B

Data Collected from Survey of Graduates from Taiwan Vocational and Technical Agriculture Curricula

調查獲取農業職業及專科學校畢業生之資料

Table 1. Percent of Graduates by Number of Present Jobs, Level of Schooling and Year of Graduation.

畢業生現就職業依學階及畢業年期之百分率

Table 2. Employment in Agriculture of Taiwan Vocational Agriculture Graduates Measured at Three Periods in Time: 1962, 1968 and 1975.

民國五十一、五十七及六十四三個年度農校畢業生就業情形

Table 3. Sample, Net Sample, Number and Percent of Responses by Year of Graduation for Taiwan Senior Vocational Agriculture Graduates.

依畢業年度區分農業職業學校畢業生之樣本數，淨樣本數及問卷收回率

Table 4. Sample, Net Sample, Number and Percent of Responses by Year of Graduation and Kind of Progrom for Taiwan Technical Agriculture Graduates.

依畢業年度及學制區分農業專科學校畢業生之樣本數、淨樣本數及問卷收回率

APPENDIX B

Table 1. Percent of graduates by number of present jobs, level of schooling and year of graduation

表 1. 畢業生現就職業依學階及畢業年期之百分率

Number of Present Jobs 現就職業	Senior Vocational Agriculture Graduates 農校畢業生						Technical Institute Graduates 農專畢業生			Total 總計
	1950 三十九年 (n=196)	1955 四十四年 (n=219)	1959 四十八年 (n=284)	1964 五十三年 (n=327)	1969 五十八年 (n=550)	Sub-Total 小計 (n=1576)	1964 五十三年 (n=66)	1970 五十九年 (n=127)	Sub-Total 小計 (n=193)	(n=1769)
	%	%	%	%	%	%	%	%	%	%
One 一項	61.7	59.8	60.5	64.3	70.4	64.78	69.7	78.0	75.1	65.91
Two 兩項	29.1	32.0	35.9	27.2	13.1	24.75	19.7	3.9	9.3	23.07
More than Two 兩項以上	8.2	7.3	2.4	5.5	1.3	4.06	6.1	2.4	3.7	4.01
Military 軍事	0.0	0.9	0.4	1.8	5.4	2.47	0.0	0.0	0.0	2.21
Student 學生	0.0	0.0	0.4	0.6	1.6	0.76	1.5	7.9	5.7	1.30
Unemployed 未就業	0.5	0.0	0.0	0.3	5.3	1.97	0.0	4.7	3.1	2.09
No Response 未作答	0.5	0.0	0.4	0.3	2.9	1.21	3.0	3.1	3.1	1.41
Total 總計	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Data collected in 1975 from the sample of graduates.

APPENDIX B

Table 2. Employment in Agriculture of Taiwan Vocational Agriculture Graduates Measured at Three Periods in Time: 1962, 1968 and 1975

表 2. 民國五十一, 五十七及六十四三個年度農校畢業生就業情形

Kind of Employment 任職類別	Year of Graduation 畢業年期											
	1950 39年			1966 44年			1959 48年			1964 53年		1969 59年
	Year of Data Collection 資料蒐集年			Year of Data Collection 資料蒐集年			Year of Data Collection 資料蒐集年			Yr. of Data Collection 資料蒐集年		Yr. D. C. 資料蒐集年
	1962 51年 (n=1381)	1968 57年 (n=469)	1975 64年 (n=196)	1962 51年 (n=2779)	1968 57年 (n=459)	1975 64年 (n=219)	1962 51年 (n=3206)	1968 57年 (n=625)	1975 64年 (n=284)	1968 57年 (n=713)	1975 64年 (n=327)	1975 64年 (n=550)
	%	%	%	%	%	%	%	%	%	%	%	%
Agriculture 農業	58.5	50.1	38.8	41.0	36.2	37.0	25.4	34.4	30.3	20.8	27.2	17.3
Non-Agri. 非農業	40.3	48.8	60.7	57.6	62.5	61.2	68.8	62.7	69.7	59.3	71.9	77.1
No Response 未作答	1.2*	1.1**	0.5	1.4*	1.3**	0.9	5.8*	2.9**	0.0	19.9**	0.9	5.6

Sources: Reports on research conducted by Meaders, Lin and Hu in 1962, 1968 and 1975.

* Includes only No Respose 僅包括未作答者

** Includes Students, Unemployed, and Occupations Not Elsewhere Classified 包括學生、未就業者及職業無從歸類者

APPENDIX B

Table 3. Sample, Number and Percent of Responses by Year of Graduation for Taiwan Senior Vocational Agriculture Graduates

表 3. 依畢業年度區分農業職業學校畢業生之樣本數、淨樣數及問卷收回率

Year of Graduation 畢業年期	Sample* 樣本數	Net Sample** 淨樣本數	Responses*** 問卷收回數	
			Number 數目	Percent 百分率
1950 三十九年	244	231	197	85.28
1955 四十四年	263	261	219	83.91
1959 四十八年	342	337	284	84.27
1964 五十三年	412	389	327	84.06
1969 五十八年	647	646	550	85.14
Total 總計	1908	1864	1577	84.60

* Sample. One-half (½) of the 1968 respondents from 1950, 1955, 1959 and 1964 graduates were randomly selected. One sixth (1/6th) of the 1969 graduates were selected through the use of a randomly selected starting number.

民國五十七年所蒐集之三十九，四十四，四十八及五十三年畢業生問卷以隨機方法選二分之一，民國五十八年畢業生則以隨機選取首號方法選六分之一。

** Net Sample=Sample−(Died+Address Unknown). When possible RESERVE SAMPLE respondents were substituted for DIED and ADDRESS UNKNOWN.

淨樣本數＝樣本數－(死亡者＋地址不明者)。如可能時以備用樣本補充。

*** Data were collected during March-May 1975

資料蒐集時期爲民國六十四年三月～五月

APPENDIX B

Table 4. Sample, Net Sample, Number and Percent of Responses by Year of Graduation and Kind of Program for Taiwan Technical Agriculture Graduates

表 4. 依畢業年度及學制區分農業專科學校畢業生之樣本數、淨樣本數及問卷收回率

Year of Craduation 畢業年期	Kind of Program 制 別	Sample* 樣本數	Net Sample** 淨樣本數	Responses*** 問卷收回數	
				Number 人 數	Percent 百分率
1964 53年	3-Year System 三 年 制	87	86	66	76.74
1970 59年	3-Year System 三 年 制	58	58	49	84.48
	5-Year System 五 年 制	88	88	77	87.50
	Total 總計	233	232	192	82.76

* Sample. One-half (½) of the 1964 graduates and one-fourth (¼) of the 1970 graduates were selected through the use of a ramdomly selected starting number.
計民國五十三及五十九年畢業生以隨機選取首號方法各選二分之一及四分之一

** Net Sample=Sample−(Died+Address Unknown). When possible RESERVE SAMPLE respondents were substituted for DIED and ADDRESS UNKNOWN.
淨樣本數＝樣本數－(死亡＋地址不明者)，如可能時以備用樣本補充

*** Data were collected during March-May, 1975.
資料蒐集時期爲民國六十四年三～五月。

APPENDIX C

Maps Showing Agricultural Population, Farmer Associations, 1974-75 Vocational and Technical Agriculture Programs and Planned Specialized Areas of Agricultural Products by Hsien.

以縣際區分農業人口，農會，六十三學年度農業職業學校，農業專科學校及農業專業區分布圖

Maps 圖示

1. Ilan County 宜蘭縣
2. Taipei County (including Taipei City and Keelung City) 臺北縣（包括臺北市及基隆市）
3. Taoyuan County 桃園縣
4. Hsinchu County 新竹縣
5. Miaoli County 苗栗縣
6. Taichung County (including Taichung City) 臺中縣（包括臺中市）
7. Changhwa County 彰化縣
8. Yunlin County 雲林縣
9. Nantou County 南投縣
10. Chiayi County 嘉義縣
11. Tainan County (including Tainan City) 臺南縣（包括臺南市）
12. Kaohsiung County (including Kaohsiung City) 高雄縣（包括高雄市）
13. Pingtung County 屏東縣
14. Taitung County 臺東縣
15. Hualien County 花蓮縣
16. Penghu County 澎湖縣

APPENDIX C

The following is a key to interpretation of the hsien maps and to the sources of information which were used to locate the various data.

下列各圖例用作分縣地圖之說明並陳示資料之來源

I. Map of each county. Scale: 1:500,000 分縣地圖

II. Specialized Areas of Agricultural Products 專業區之農產品

Key
圖例

▤ Special Crops 特用作物

▨ Other Common Crops, except Rice 除稻米外，其他一般作物

▥ Swine 豬

▦ Beef Cattle 肉牛

░ Dairy Cattle 乳牛

Sources: *Taiwan Agriculture Yearbook*, 1974 Edition.
Special Issue for Important Policies of Accelerating Rural Construction with the Budget Offered by the Central Government. (Printed by JCRR.) 1973

III. Farmer Associations (FA) 各級農會

Key
圖例

● FA of County (including big city) level 縣級（省轄市）農會

○ FA of Township, Town or City 鄉鎮級農會

The number of extension workers and supervisors includes agricultural management, 4-H and rural home economics.

推廣及指導人員數，包括農事經營、四健會及農村家事

The Township Farmer Associations include the branches of big FAs.

鄉農會，包括大型農會之分會

The Town/City FAs include Divisions of big city units such as Taipei and Kaohsiung. 城鎮農會，包括類如臺北市、各省轄市之支會

The County FAs include such big city units as Taipei City and Tainan City. 縣農會，包括臺北市及各省轄市農會

Sources:

A. *List of Working Items and Budget of Agricultural Extension Education Programs of Farmer Associations of Each Class in Taiwan Province in* 1975.

B. Numbers of extension personnel are limited to those who were subsidized from PDAF in 1975. The numbers are less than the actual number of each FA of each level. Also, the extension workers or supervisors for veterinary work are not included.

六十四年由農林廳補助之推廣人員有定額限制，各級農會人員均較編制數爲少，獸醫推廣及指導人員未包括在內。

Ⅳ. Land Area 土地面積

Source: *Taiwan Agricultural Yearbook*, 1974 Edition.
p. 35, Total land area at end of 1973.
p. 46. Cultivated area.

Ⅴ. Agricultural Population 農業人口

Farm Households. *Taiwan Agricultural Yearbook*, 1974 *Edition*, P. 49
農戶數

Commercial Farm Population. 1970 *Agricultural Census of Taiwan-Fukien District of the Republic of China*, Vol. 1, p. 184.
企業農場人口

Agriculturally Employed Population aged 15 Years and Over. 1973 *Taiwan Demographic Fact Book*, Republic of China, Ministry of Interior, September 1974, pp. 212-275.
十五歲以上農業性就業人口

Ⅵ. Vocational and Technical Programs in Agriculture, 1974-75.

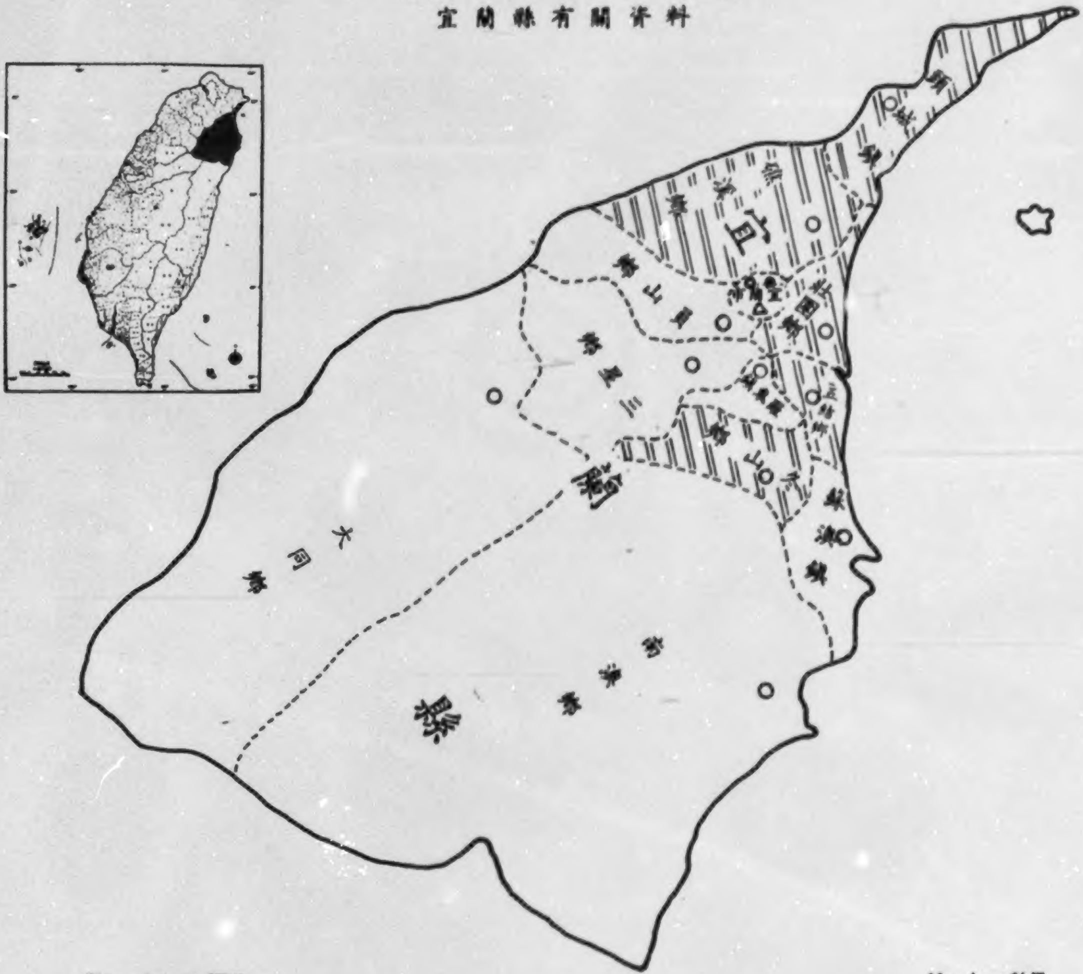
農業職業及技術教育（六十三學年度）

Key 圖例
- ⟁ Agriculture Institute 農業專科學校
- ▲ Vocational Agriculture School 農業職業學校
- △ Vocational Agriculture and Industry School 農工職業學校
- ◮ Senior High School with Vocational Agriculture Division 設有農科之綜合高中

AH	Animal Husbanadry 畜牧
AHV	Animal Husbandry & Veterinary 畜牧獸醫
VS	Veterinary Science 獸醫
CA	Comprehensive Agriculture 綜合農業
AM	Agricultural Management (Business) 農場經營
AGR	Agronomy 農藝
AE	Agricultural Economics 農業經濟
AEx	Agricultural Extension 農業推廣
ACE	Agricultural Civil Engineering 農業土木
F	Forestry 森林
RHE	Rural Home Economies 農村家事
FP	Food Processing 食品加工
FM	Farm Machinery 農業機械
SP	Silk Production (Sericulture) 蠶絲
H	Horticulture 園藝
AEG	Agricultural Engineering 農業工程
FI	Food Industry 食品工業

Source: Form B-1 submitted by the schools to the research project, April-May, 1975.

Selected Data for Ilan Cunty
宜蘭縣有關資料



Size of area 面積

Total area 總面積	2137.46 Sq.Km
Cultivated area 耕地面積	284.16 Sq.Km

Agricultural specialties 主要農產品

Swine 猪

Farmer Associations: 農會	Number 數量
Township 鄉	8
Town/city 鎮（市）	4
County 縣	1

Total extension personnel
推廣人員總數

Extension workers 指導員	32
Supervisors 督導	3

	Number 數量
Farm Households 農戶	30,631
Commercial farm pop. 企業農場人口	624
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	59,812

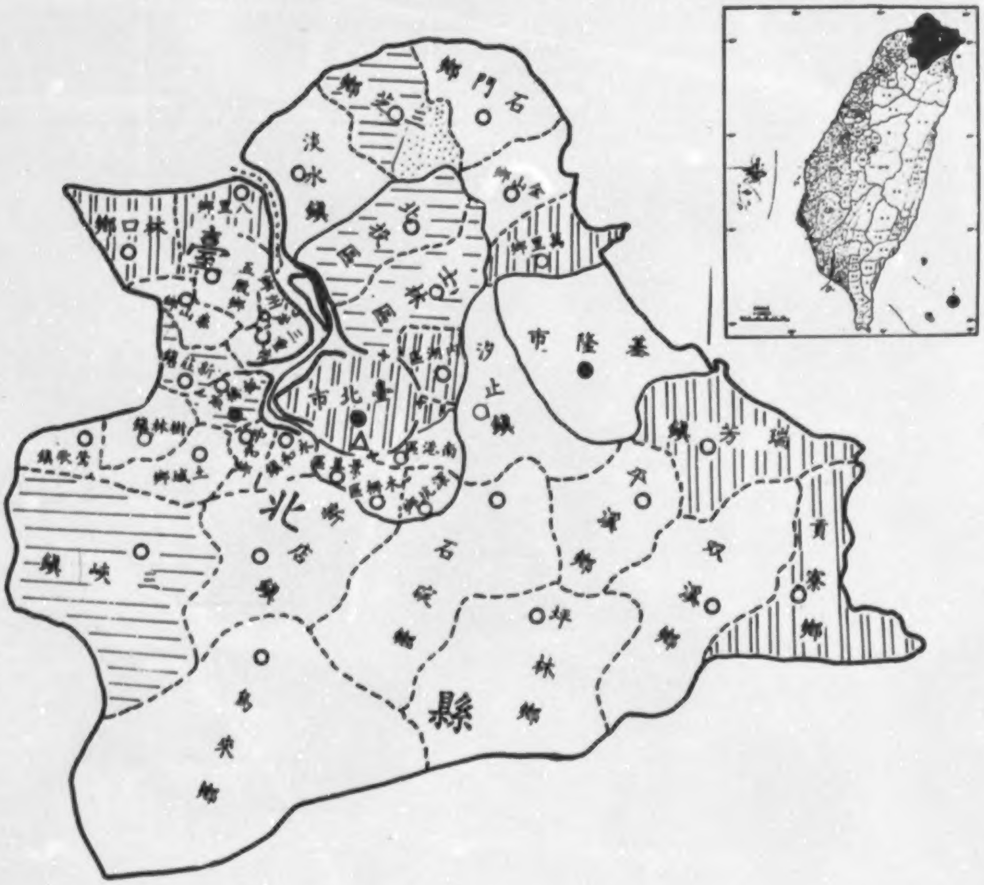
Vocational/Technical agriculture Programs:
農業技職教育

1. Ilan VA&I 宜蘭農工職校

Divisions: 科別

CA/AM, FP, FM, F, AHV, RHE.

Selected Data for Taipei County (Incl. Taipei City, Keelung City)
臺北縣（包括臺北市、基隆市）有關資料



Size of area 面積

Total area 總面積	2456.91 Sq.Km
Cultivated area 耕地面積	490.85 Sq.Km

Agricultural specialties 主要農產品

Vegetables 蔬菜	Tea 茶
Swine 猪	Dairy cow 乳牛

Farmer Associations 農會	Number 數量
Township 鄉	17
Town/city 鎮（市）	18
County 縣（市）	3

Total extension personnel 推廣人員總數

Extension workers 指導員	66
Supervisos 督導	5

	Number 數量
Farm Households 農戶	42,921
Commercial farm pop. 企業農場人口	1,407
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	122,553

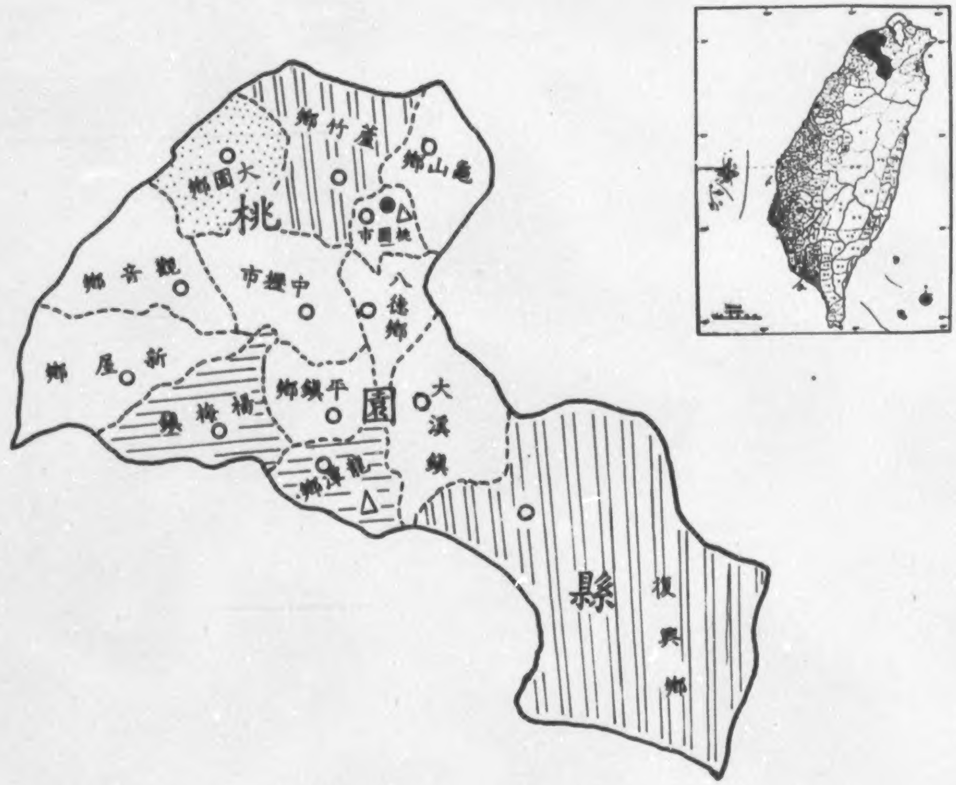
Vocational/Technical agriculture Programs:
農業技職教育

1. Taipei V-I&A 臺北工農職校

   Divisions: 科別

   CA/AM, FP.

Selected Data for Taoyuan County
桃園縣有關資料



Size of area 面積

Total area 總面積	1220.88 Sq.Km
Cultivated area 耕地面積	511.02 Sq.Km

Agricultural specialties 主要農產品

Tea 茶 Swine 豬

Dairy cow 乳牛

Farmer Associations 農會	Number 數量
Township 鄉	9
Town/city 鎮（市）	4
County 縣	1

Total extension personnel 推廣人員總數

Extension workers 指導員	39
Supervisors 督導	4

	Number 數量
Farm Households 農戶	43,549
Commercial farm pop. 企業農場人口	488
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	82,505

Vocational/Technical agriculture Programs:
農業技職教育

1. Taoyuan V-A&I 桃園農工職校

   Divisions: 科別

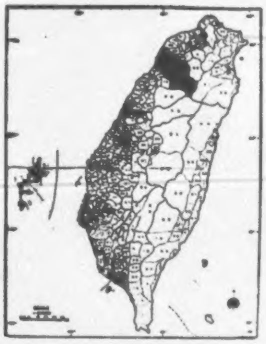
   CA/AM, AHV, FM.

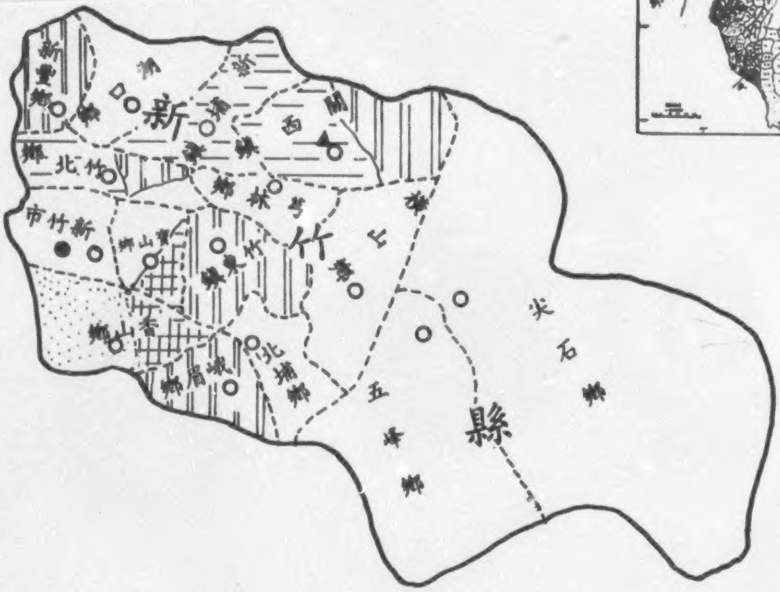
2. Lungtan V-A&I 龍潭農工職校

   Divisions:

   CA/AM, AHV, FP.

Selected Data for Hsinchu County
新竹縣有關資料





Size of area: 面積

Total area 總面積	1531.58 Sq.Km
Cultivated area 耕地面積	410.12 Sq.Km

Agricultural specialties 主要農產品

Tea 茶	Mushroom 洋菇
Vegetables 蔬菜	Swine 猪
Dairy cow 乳牛	Beef cattle 肉牛

Farmer Associations 農會	Number 數量
Township 鄉	11
Town/city 鎮（市）	4
County 縣	1

Total extension personnel 農業推廣人員總數

Extension workers 指導員	42
Supervisors 督導	5

	Number 數量
Farm Households 農戶	35,463
Commercial farm pop. 企業農場人口	729
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	84,548

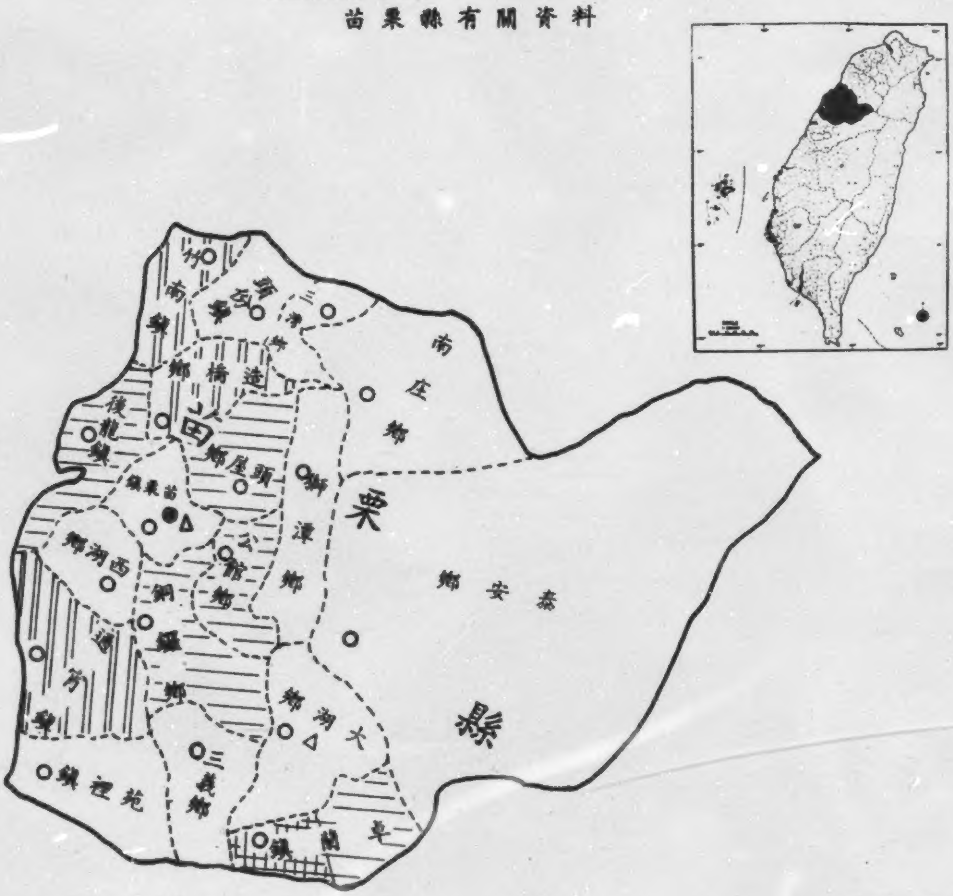
Vocational/Technical agriculture Programs:
農業技職教育

Kwansi V-A 關西農校

Divisions: 科別

CA/AM, FP, AHV.

Selected Data for Miaoli County
苗栗縣有關資料



Size of area 面積

Totl area 總面積	1820.31 Sq.Km
Cultivated area 耕地面積	388.11 Sq.Km

Agricultural specialties 主要農產品

- Peanut 花生
- Citronella 香茅草
- Mushroom 洋菇
- Tea 茶
- Citrus fruits 柑橘
- Silk production 蠶絲
- Asparagus 蘆筍
- Swine 猪
- Beef cattle 肉牛

Farmer Associations 農會	Number 數量
Township 鄉	11
Town/city 鎮（市）	7
County 縣	1

Total extension personnel 農業推廣人員總數

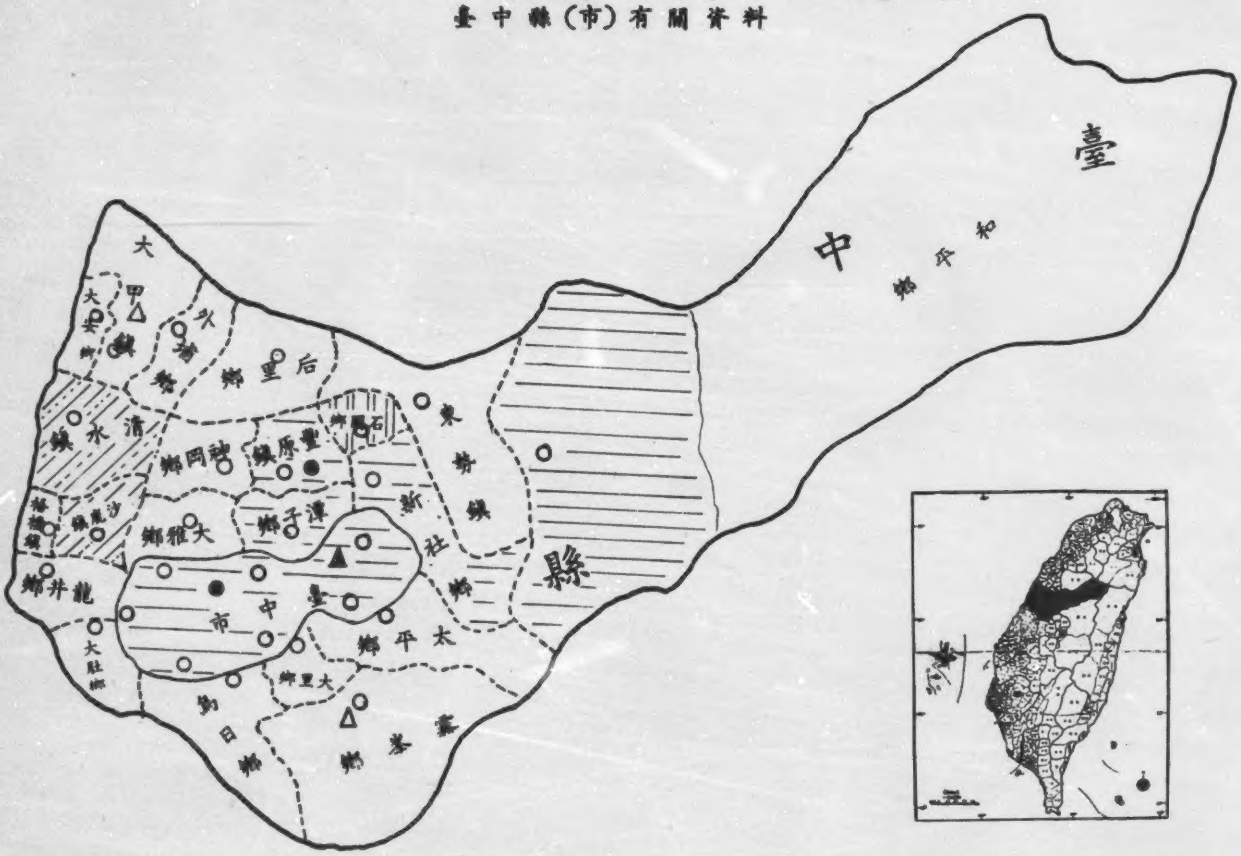
Extension workers 指導員	64
Supervisors 督導	4

	Number 數量
Farm Households 農戶	46,255
Commercial farm pop. 企業農場人口	712
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	89,104

Vocational/Technical agriculture Programs:
農業技術教育

1. Miaoli V-A&I 苗栗農工職校
   Divisions: 科別
   FP, F, AHV.
2. Tahu V-A&I 大湖農工職校
   Divisions: 科別
   FP, SP, RHE.

Selected Data for Taichung County (Incl. Taichung City)
臺中縣(市)有關資料



Size of area 面積

Total area 總面積	2214.89 Sq.Km
Cultivated areas 耕地面積	613.37 Sq.Km

Agricultural specialties 主要農產品

Tobacco 菸草	Loquat 枇杷
Lichee 荔枝	Sorghum 高粱
Sugar-cane 甘蔗	Bamboo shoot 竹筍
Pear 梨	Flowers 花卉
Citrus fruits 柑橘	Swine 豬
Apple 蘋果	Grape 葡萄

Farmer Associations: 農會	Number 數量
Township 鄉	16
Town/city 鎮（市）	13
County 縣（市）	2

Total extension personnel: 農業推廣人員總數

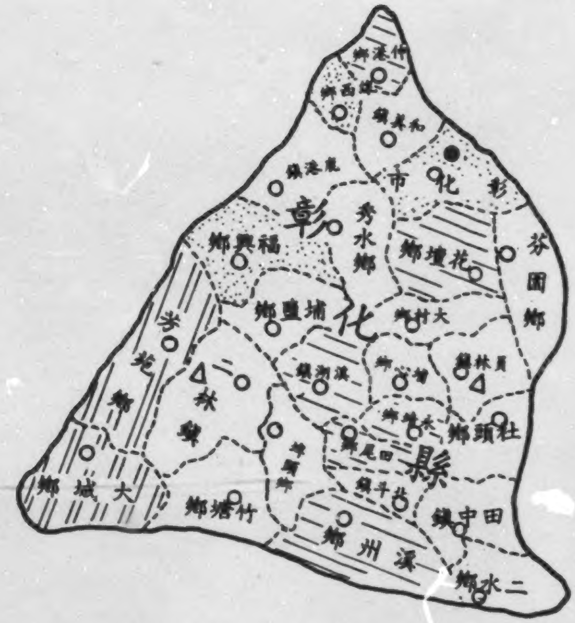
Extension workers 指導員	97
Supervisors 督導	9

	Number 數量
Farm Households 農戶	74,060
Commercial farm pop. 企業農場人口	1,524
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	199,579

Vocational/Technical agriculture Programs: 農業技職教育

1. Taichung V-A 臺中農校
   Divisions: 科別
   CA/AM, AH, FP, FM, ACE, F.
2. Tachia V-A&I 大甲農工職校
   Divisions: 科別
   FP, AHV.
3. Wufeng V-A&I 霧峯農工職校
   Divisions. 科別
   CA/AM, FP, RHE.

Selected Data for Changhwa County
彰化縣有關資料


伸港鄉
線西鄉
和美鎮
鹿港鎮
彰化市
彰
化
縣
福興鄉
秀水鄉
花壇鄉
芬園鄉
埔鹽鄉
大村鄉
芳苑鄉
二林鎮
溪湖鎮
埔心鄉
員林鎮
永靖鄉
社頭鄉
埤頭鄉
田尾鄉
北斗鎮
田中鎮
大城鄉
竹塘鄉
溪州鄉
二水鄉

Size of area: 面積

Total area 總面積	1066.40 Sq-Km
Cultivated area 耕地面積	760.65 Sq-Km

Agricultural specialties 主要農產品

- Sugar-cane 甘蔗
- Peanut 落花生
- Pineapple 鳳梨
- Grape 葡萄
- Lichee 荔枝
- Asparagus 蘆筍
- Mushroom 洋菇
- Dairy cow 乳牛
- Vegetables 蔬菜
- Garlic 蒜
- Bamboo shoot 竹筍
- Flowers 花卉
- Swine 豬

Farmer Associations 農會	Number 數量
Township 鄉	18
Town/city 鎮（市）	8
County 縣	1

Total extension personnel: 農業推廣人員總數

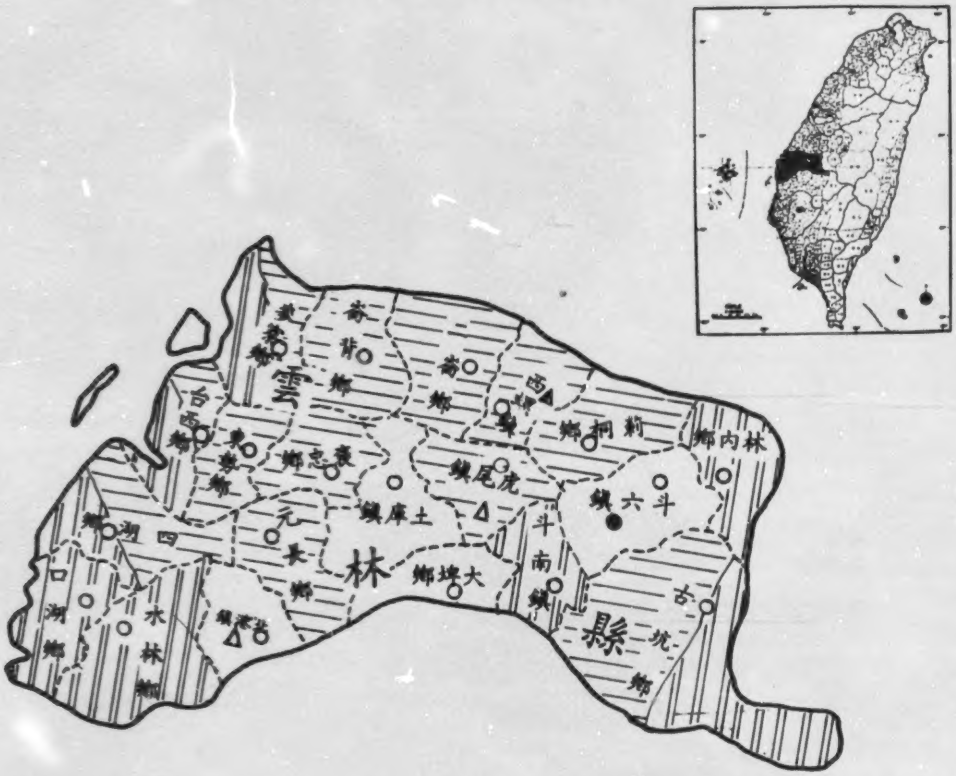
Extension workers 指導員	71
Supervisors 督導	6

	Number 數量
Farm Households 農戶	100,802
Commercial farm pop. 企業農場人口	1,343
Agr. employed pop. 15 Years old & over 十五歲以上農業性就業人口	234,246

Vocational/Technical Agriculture Programs:
農業技職教育

1. Yuanlin V-A&I 員林農工職校
   Divisions 科別
   CA/AM, FP, FM, AHV.
2. Erhlin V-A&I 二林農工職校
   Divisions 科別
   CA/AM, RHE.

Selected Data for Yunlin County
雲林縣有關資料



Size of Area 面積

Total area 總面積 ··················1290.83 Sq.Km

Cultivated area 耕地面積 ·········862.45 Sq.Km

Agricultural specialties 主要農產品

Suger-cane 甘蔗
Corn 玉米
Mushroom 洋菇
Peanut 花生
Asparagus 蘆筍
Peppermint 薄荷
Vegetables 蔬菜
Watermelon 西瓜
Garlic 蒜
Bamboo shoot 竹筍
Swine 豬

Farmer Associations 農會	**Number 數量**
Township 鄉	14
Town/City 鎮（市）	6
County 縣	1

Total extension personnel 推廣人員總數

Extension workers 指導員 ······················79

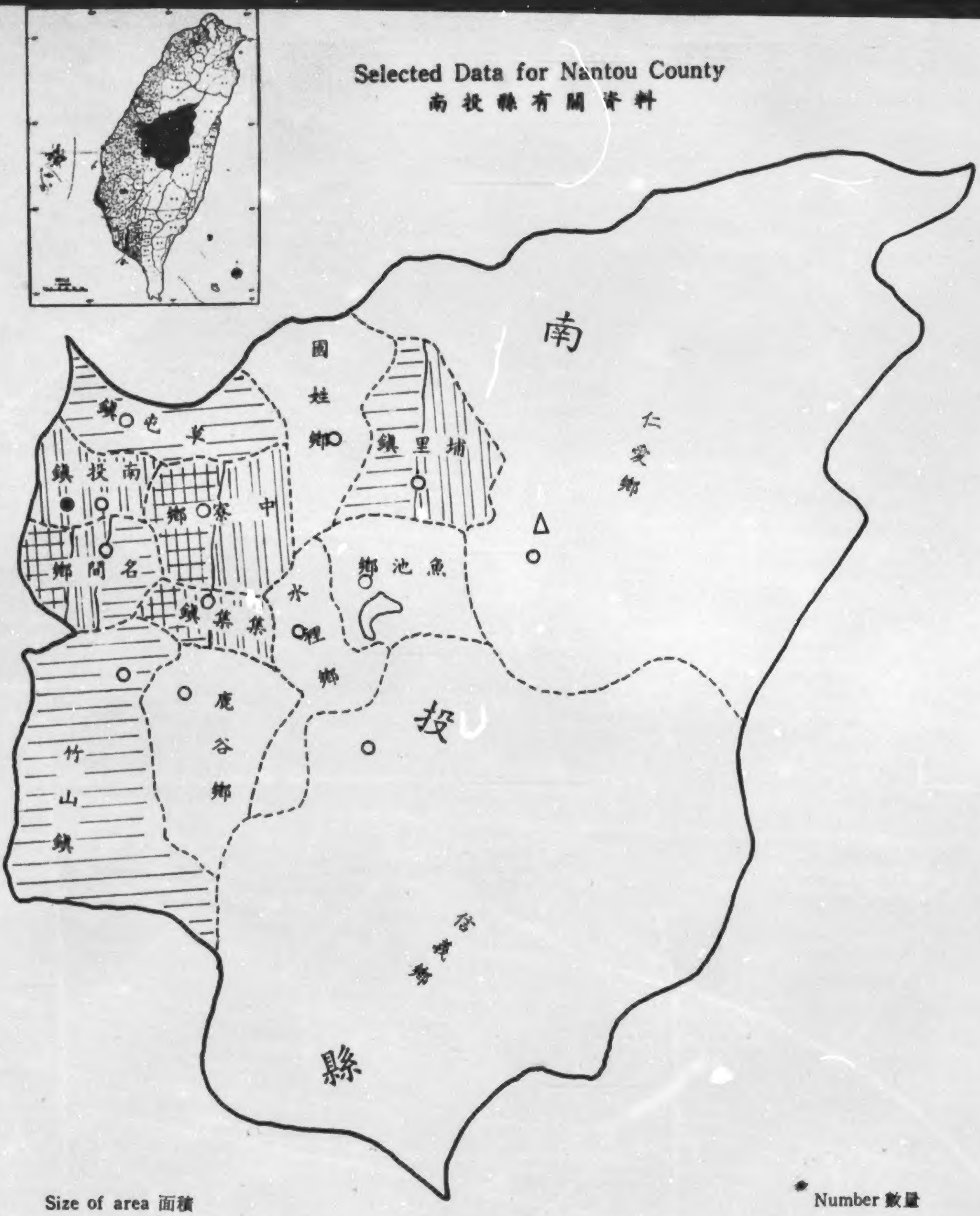
Supervisors 督導 ································ 6

	Number 數量
Farm Households 農戶	82,745
Commercial farm pop. 企業農場人口	4,900
Agr. employed pop. 15 Years old & over 十五歲以上農業就業性人口	258,164

Vocational/Technical agriculture Programs 農業技職教育

1. Huwei V-A&I 虎尾農工職校
   Divisions: 科別
   FP, FM, AHV.
2. Hsilo Senior H. 西螺高中
   Divisions: 科別
   FP, FM, AHV.
3. Peikong V-A&I 北港農工職校
   Divisions: 科別
   CA/AM, FM, AHV.

Selected Data for Nantou County
南投縣有關資料



Size of area 面積

Total area 總面積	4106.43 Sq.Km
Cultivated area 耕地面積	565.86 Sq.Km

Agricultural specialties 主要農產品

- Millet 粟
- Tobacco 煙草
- Cassava 樹薯
- Banana 香蕉
- Pineapple 鳳梨
- Beef cattle 肉牛
- Prums Mume 梅
- Lichee 荔枝
- Pear 梨
- Bamboo shoot 竹筍
- Swine 豬

Farmer Associations 農會	Number 數量
Township 鄉	8
Town/city 鎮（市）	5
County 縣	1

Total extension Personnel 數量推廣人員總數

Extension workers 指導員	53
Supervisors 督導	4

	* Number 數量
Farm Households 農戶	52,159
Commercial farm pop. 企業農場人口	577
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	125,722

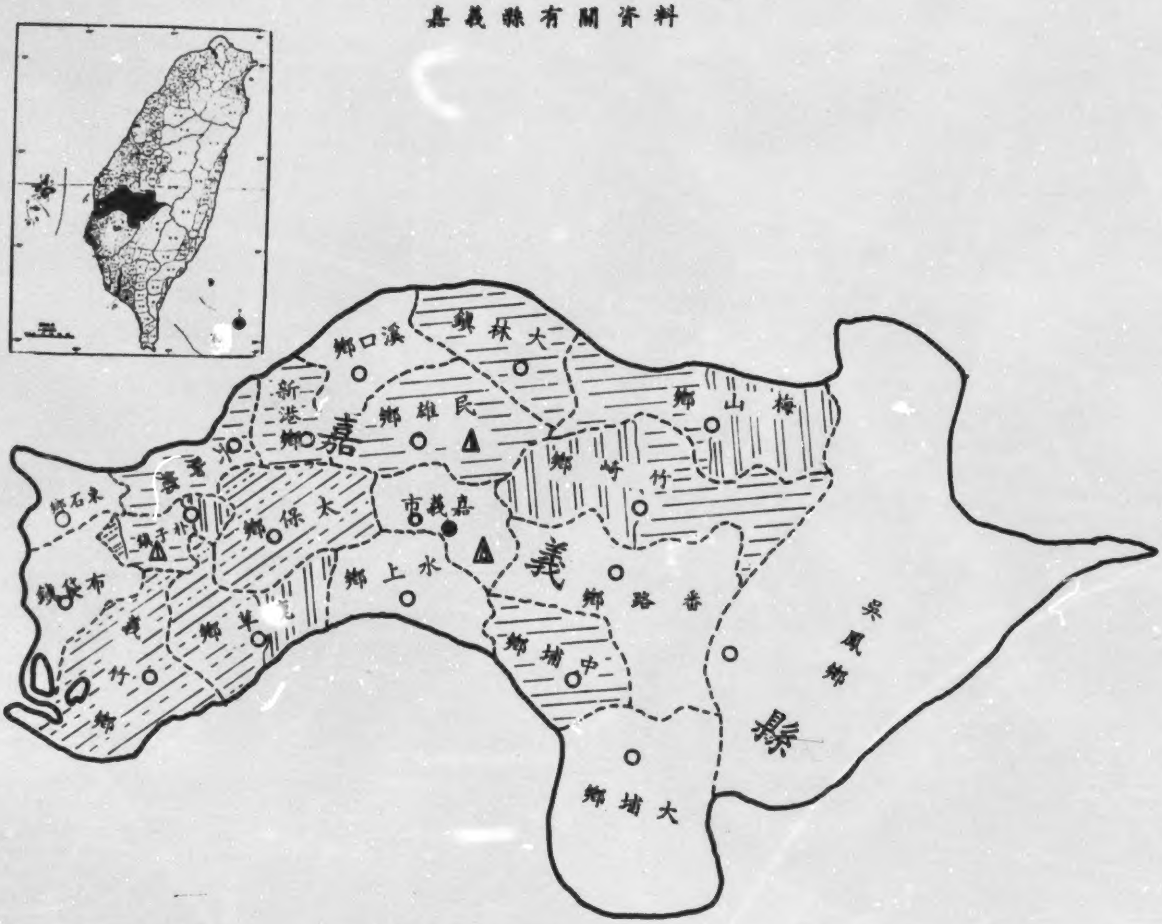
Vocational/Technical agriculturc Programs 農業技職教育

1. Jen-Ai V-A 仁愛農校

   Divisions: 科別

   CA/AM, F, RHE.

Selected Data for Chiayi County
嘉義縣有關資料



Size of area 面積

Total area 總面積	1951.39 Sq.Km
Cultivated area 耕地面積	695.31 Sq.Km

Agricultural specialties 主要農產品

Corn 玉米
Sorghum 高粱
Tobacoo 煙草
Sugar-cane 甘蔗
Peanut 花生
Citrus fruits 柑橘
Lichee 荔枝
Asparagus 蘆筍
Soybean 大豆
Bamboo Shoot 竹筍
Vegetables 蔬菜
Swine 豬

Farmer Associations 農會	Number 數量
Tonnship 鄉	15
Town/city 鎮（市）	4
County 縣	1

Total extension personnel 推廣人員總數

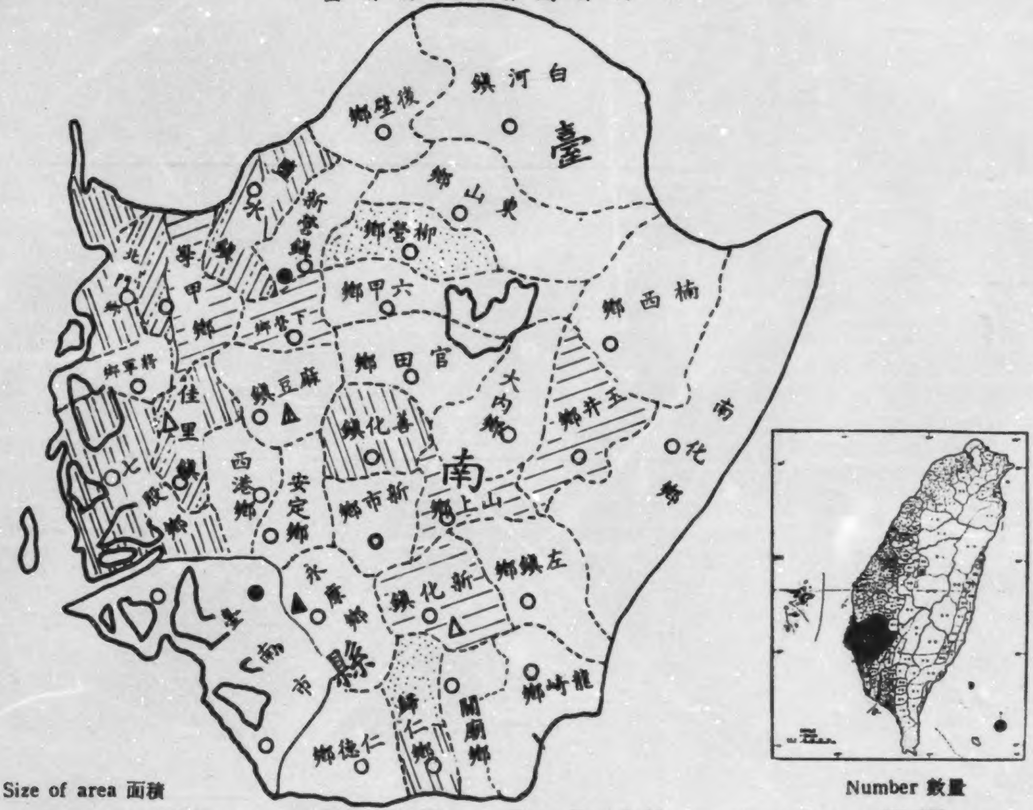
Extension workers 指導員	78
Supervisors 督導	7

	Number 數量
Farm Households 農戶	65,645
Commercial farm pop. 企業農場人口	1,071
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	172,912

Vocational/Technical agriculture Programs 農業技職教育

1. Chiayi Inst. of Agr. 嘉義農業專科學校
   Divisions: 科別
   FP, AGR, F, AE, AEG, AHV, H.
   Divisions for Evening school: 夜間部科別
   AGR, FP, V, AEG.
2. Tunghse Senior H. 東石高中
   Divisions: 科別
   FP, FM.
3. Minghsiung Senior H. 民雄高中
   Divisions: 科別
   FP, FM.

Selected Data for Tainan County (Incl. Tainan City)
臺南縣（市）有關資料


臺南縣
白河鎮
後壁鄉
東山鄉
柳營鄉
新營鎮
鹽水鎮
六甲鄉
下營鄉
學甲鎮
北門鄉
將軍鄉
佳里鎮
麻豆鎮
官田鄉
楠西鄉
大內鄉
玉井鄉
南化鄉
善化鎮
西港鄉
七股鄉
安定鄉
新市鄉
山上鄉
左鎮鄉
新化鎮
永康鄉
臺南市
龍崎鄉
關廟鄉
歸仁鄉
仁德鄉

Size of area 面積

Total area 総面積	2191.65 Sq.Km
Cultivated area 耕地面積	1009.98 Sq.Km

Agricultural specialties 主要農產品

- Corn 玉米
- Cassoava 樹薯
- Pineapple 鳳梨
- Citrus fruits 柑橘
- Mango 芒果
- Sorghum 高粱
- Silk production 蠶絲
- Dairy cow 乳牛
- Papaya 木瓜
- Lichee 荔枝
- Asparagus 蘆筍
- Mushroom 洋菇
- Soybean 大豆
- Garlic 蒜
- Swine 豬

Farmer Associations 農會	Number 數量
Township 鄉	23
Town/city 鎮（市）	10
County 縣（市）	2

Total extension personnel 推廣人員總數

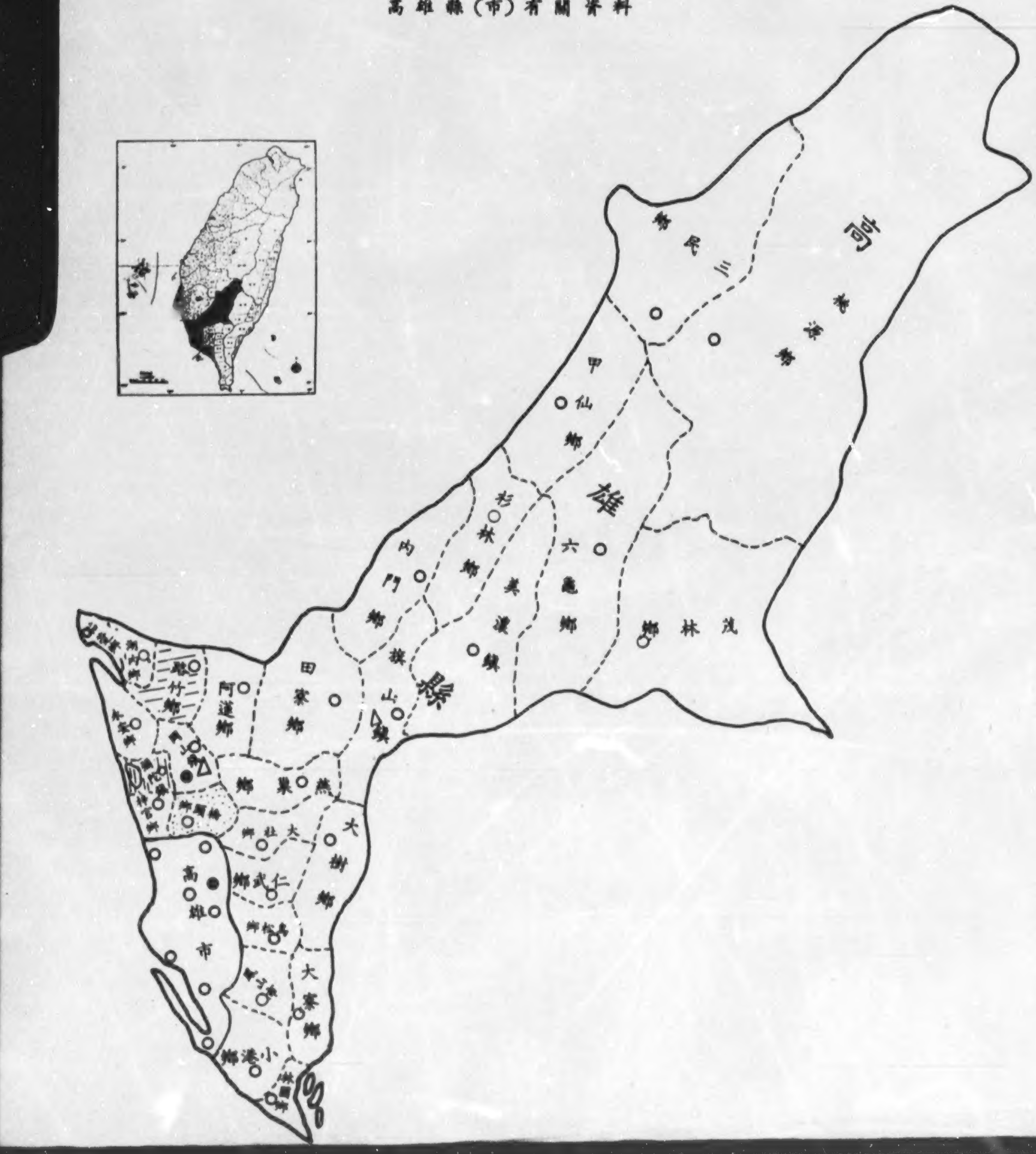
Extension workers 指導員	147
Supervisors 督導	10

	Number 數量
Farm Households 農戶	101,955
Commercial farm pop. 企業農場人口	1.269
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	259,613

Vocational/Technical agriculture Programs 農業技職教育

1. Tainan V-A 臺南農校
   Divisions: 科別
   CA/AM, FP, FM, ACE, RHE, AHV.
2. Tsenwen Senior H. 曾文高中
   Divisions: 科別
   FP, AHV.
3. Hsinghua V-A&I 新化農工職校
   Divisions: 科別
   CA/AM, FP.
4. Peimen V-A&I 北門農工職校
   Divisions: 科別 FP, AHV.

Selected Data for Kaohsiung County (Incl. Kaohsiung City)
高雄縣(市)有關資料


高
雄
縣
三民鄉
桃源鄉
甲仙鄉
杉林鄉
六龜鄉
內門鄉
美濃鎮
茂林鄉
田寮鄉
旗山鎮
阿蓮鄉
路竹鄉
燕巢鄉
大社鄉
大樹鄉
仁武鄉
高雄市
鳥松鄉
鳳山市
大寮鄉
小港鄉
林園鄉

Size of area 面積

Total area 總面積	2946.76 Sq.Km
Cultivated area 耕地面積	626.63 Sq.Km

Agricultural specialties 主要農產品

Soybean 大豆	Sugar-cane 甘蔗
Tobacco 煙草	Papaya 木瓜
Banana 香蕉	Vegetables 蔬菜
Pineapple 鳳梨	Dairy cow 乳牛
Swine 豬	

Farmer Associations 農會	Number 數量
Township 鄉	24
Town/city 鎮（市）	11
County 縣（市）	2

Total extension personnel 推廣人員總數

Extension workers 指導員	103
Supervisors 督導	8

	Number 數量
Farm Households 農戶	66,340
Commercial farm pop. 企業農場人口	3,715
Agr. employed pop. 15 Years old & over 十五歲以上農業性就業人口	189,326

Vocational/Technical agriculture Programs 農業技職教育

1. Kangshan V-A&I 岡山農工職校

   Divisions: 科別

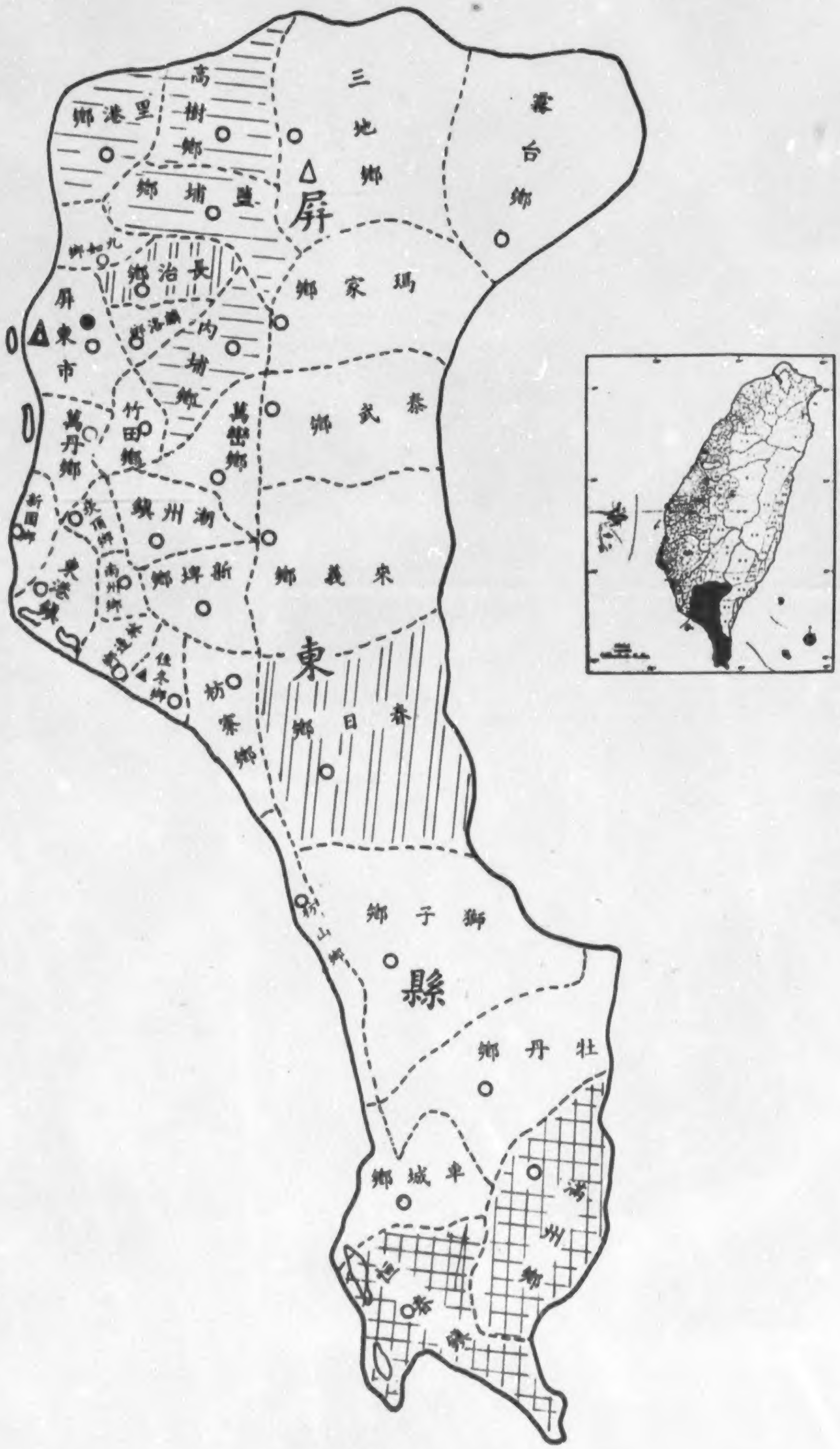
   FP, FM, RHE.

2. Chisan V-A&I 旗山農工職校

   Divisions: 科別

   CA/AM, FP, FM, RHE, AHV.

Selected Data for Pingtung County
屏東縣有關資料


屏東縣
高樹鄉
里港鄉
三地鄉
霧台鄉
鹽埔鄉
九如鄉
長治鄉
瑪家鄉
屏東市
麟洛鄉
內埔鄉
泰武鄉
萬丹鄉
竹田鄉
萬巒鄉
新園鄉
崁頂鄉
潮州鎮
東港鎮
南州鄉
新埤鄉
來義鄉
林邊鄉
佳冬鄉
枋寮鄉
春日鄉
枋山鄉
獅子鄉
牡丹鄉
車城鄉
滿州鄉
恆春鎮

	Number 數量
Farm Households	69,724

Size of area 面積

Total area 總面積	2775.60 Sq.Km
Cultivated area 耕地面積	810.37 Sq.Km

Agricultural specialties 主要農產品

- Millet 粟
- Papaya 木瓜
- Soybean 大豆
- Asparagus 蘆筍
- Tobacco 菸草
- Sugar-cane 甘蔗
- Banana 香蕉
- Pineapple 鳳梨
- Silk production 蠶絲
- Swine 豬
- Beef cattle 肉牛

Farmer Associations 農會	Number 數量
Township 鄉	29
Town/city 鎮（市）	4
County 縣	1

Total extension personnel 農業推廣人員總數

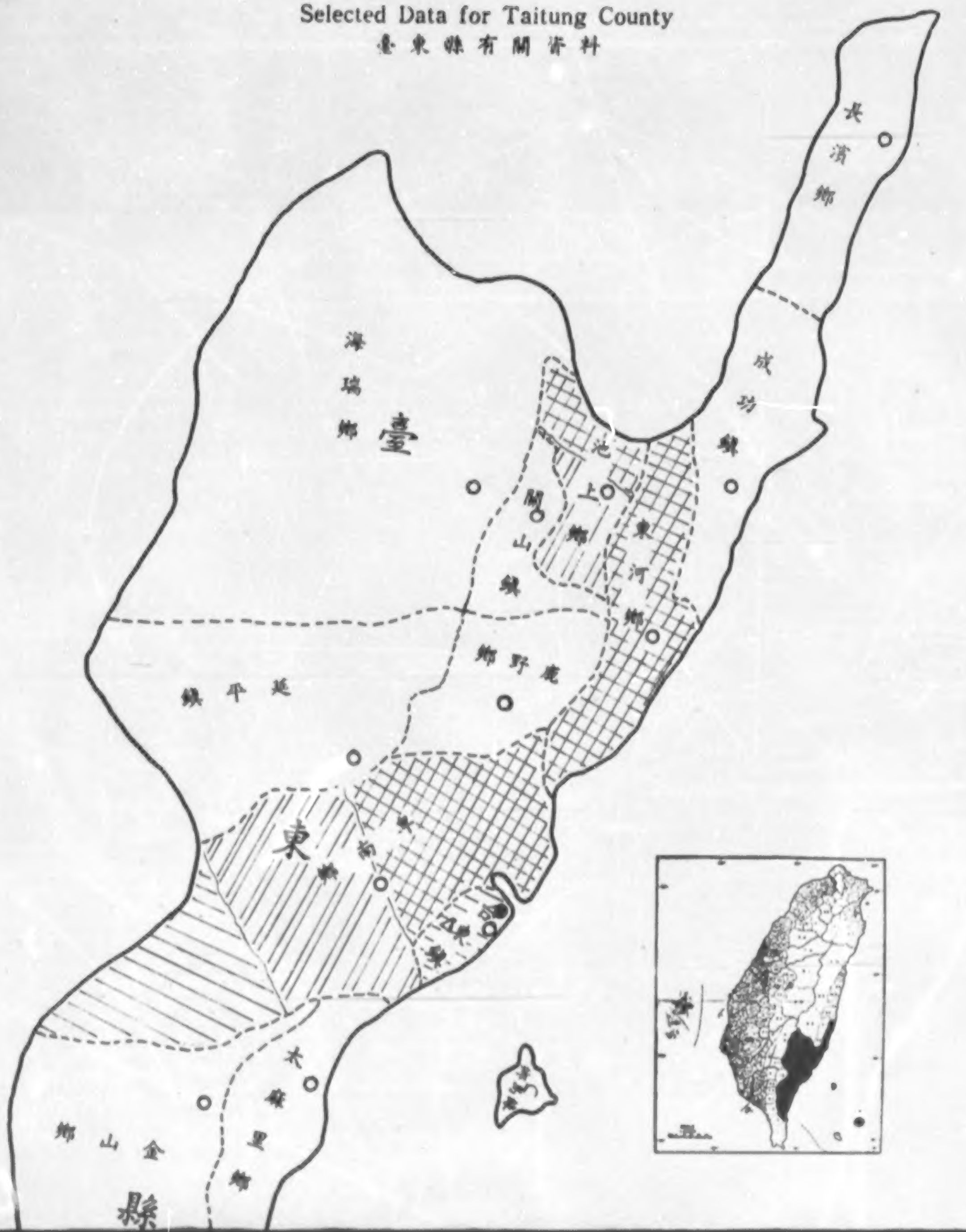
Extension workers 指導員	76
Supervisors 督導	6

	Number 數量
Farm Households 農戶	69.724
Commercial farm pop. 企業農場人口	1,876
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	224,947

Vocational/Technical agriculture Programs 農業技職教育

1. Pingtung Inst. of Agr. 屏東農業專科學校
   - Divisions: 科別
     - ① Reg. 3yr. 日間部三年制
       - AH, FP, FM, ACE, AGR, H, VS, F, Water C.
     - ② Evening 4yr. 夜間部四年制
       - AGR, FI, AEG, VS.
     - ③ Reg. 5yr. 日間部五年制
       - AH, VS, FM.
2. Chiatung V-A 佳冬農校
   - Divisions 科別
     - CA/AM, FP, FM, RHE, AHV.
3. Neipu V-A&I 內埔農工職校
   - Divisions 科別
     - CA/AM, FM, RHE, AHV.

Selected Data for Taitung County
臺東縣有關資料


長濱鄉
成功鎮
東河鄉
池上鄉
關山鎮
海瑞鄉
臺
鹿野鄉
延平鎮
東
卑南鄉
臺東鎮
太麻里鄉
金山鄉
縣

Size of area 面積

Total area 總面積	3515.25 Sq.Km
Cultivated area 耕地面積	444.90 Sq.Km

Agricultural specialties 主要農產品

- Millet 粟
- Sugar-cane 甘蔗
- Peanut 花生
- Citronella 香茅草
- Pineapple 鳳梨
- Citrus fruits 柑橘
- Silk production 蠶絲
- Swine 猪
- Beef cattle 肉牛

Farmer Associations: 農會	Number 數量
Township 鄉	13
Town/city 鎮（市）	3
County 縣	1

Total extension Personnel 農業推廣人員總數

Extension workers 指導員	33
Supervisors 督導	3

	Number 數量
Farm Households 農戶	27.481
Commercial farm pop. 企業農場人口	2,413
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	68,889

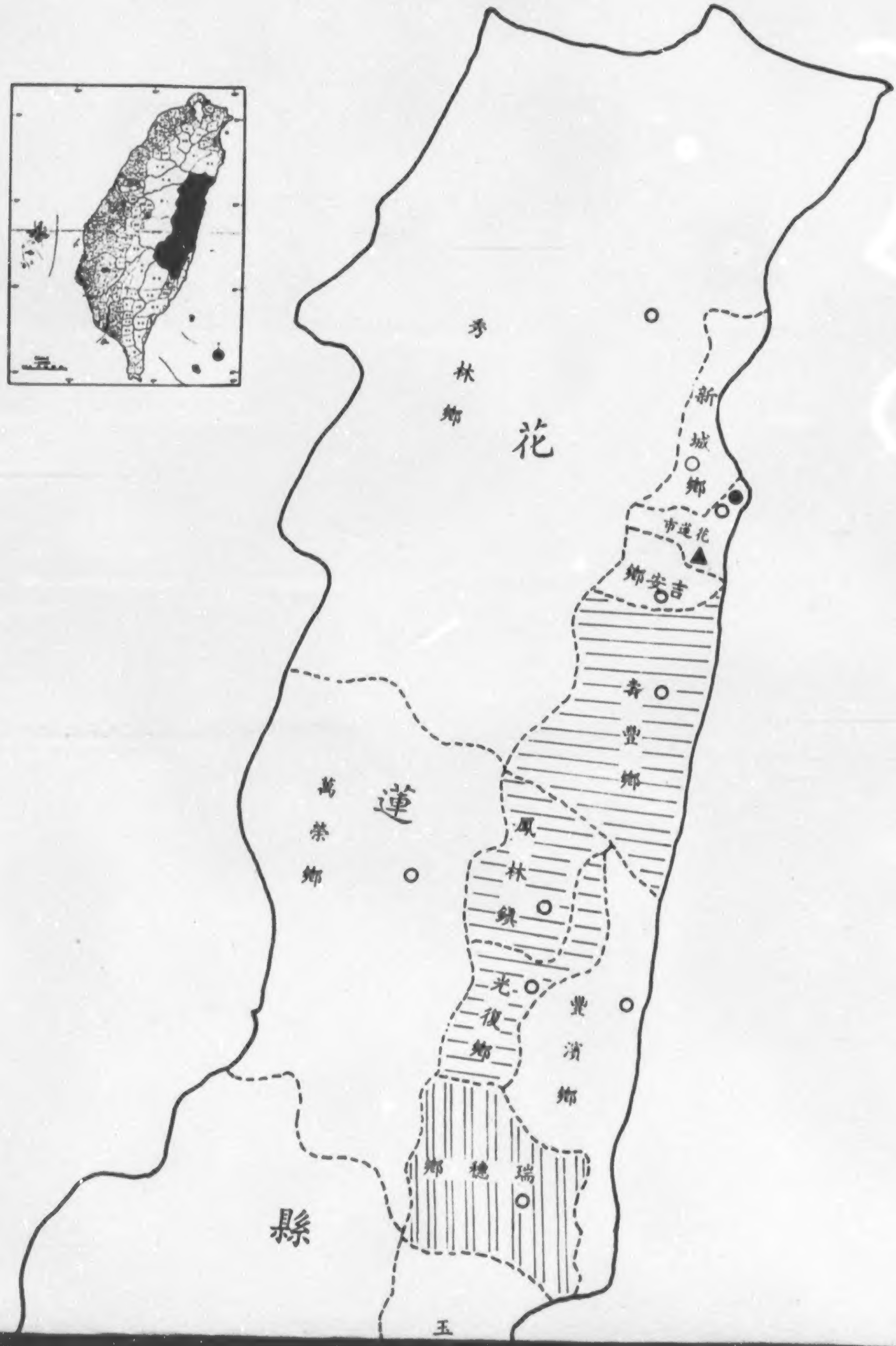
Vocational/Technical agriculture Programs 農業技職教育

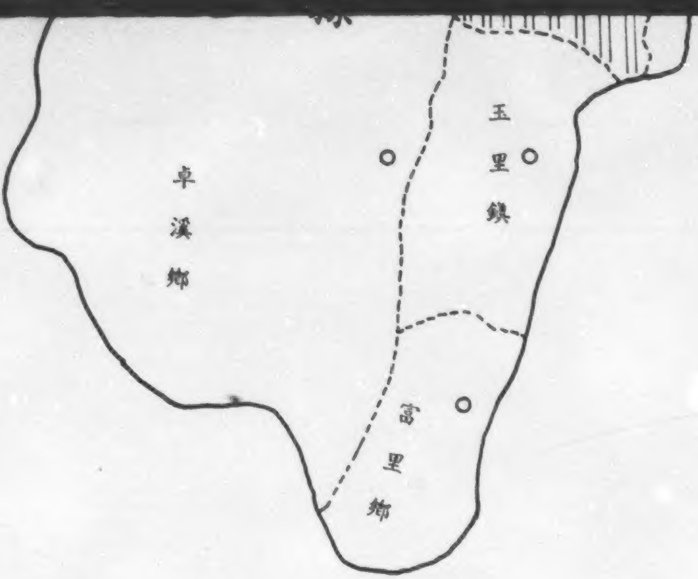
Taitung V-A&I 台東農工

Divisions 科別

CA/AM, FP, FM, AHV.

Selected Data for Hwalien County
花蓮縣有關資料


秀林鄉
花
新城鄉
花蓮市
吉安鄉
壽豐鄉
萬榮鄉
蓮
鳳林鎮
光復鄉
豐濱鄉
瑞穗鄉
縣
玉



Size of area 面積

Total area 總面積	4628.57 Sq.Km
Cultivated area 耕地面積	416.60 Sq.Km

Agricultural specialties 主要農產品

Millet 粟	Citronella 香茅草
Soybean 大豆	Water-melon 西瓜
Sugar-cane 甘蔗	Swine 猪
Peanut 花生	

Farmer Associations 農會	Number 數量
Township 鄉	11
Town/city 鎮（市）	2
County 縣	1

Total extension personnel 推廣人員總數

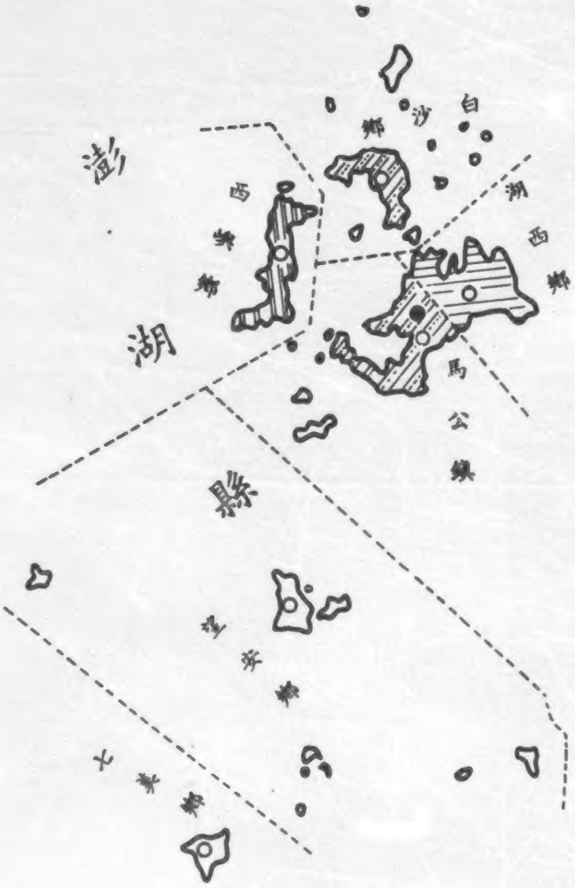
Extension workers 指導員	33
Supervisors 督導	3

	Number 數量
Farm Households 農戶	26,144
Commercial farm pop. 企業農場人口	4.306
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	64.106

Vocational/Technical agricuture Programs
農業技職教育

1. Hualien V-A 花蓮農校
   - Divisions 科別
     - CA/AM, FP, FM, ACE, RHE, F, AMV.

Selected Data for Penghu County
澎湖縣有關資料



Size of area 面積

Total area 總面積	126.86 Sq.Km
Cultivated area 耕地面積	65.83 Sq.Km

Agricultural specialties 主要農產品

Sorghum 高粱	Swine 豬
Peanut 花生	Beef cattle 肉牛

Farmer Associations 農會	Number 數量
Township 鄉	5
Town/city 鎮（市）	1
County 縣	1

Total extension personnel 農業推廣人員總數

Extension workers 指導員	12
Supervisors 督導	2

	Number 數量
Farm Households 農戶	10 691
Commercial farm pop. 企業農場人口	0
Agr. employed pop. 15 years old & over 十五歲以上農業性就業人口	29,863

Vocational/Technical Agricultare Programs 農業技職教育

None 無

APPENDIX D

Project Staff and Cooperating Institutions

研究計劃人員及合作機構

I. Project Staff
研究計畫人員

II. Names of Cooperating Schools and Junior Colleges (Institutes of Agriculture), Principals/Presidents, and Persons in Charge of the Research Activity.
合作之學校、校長及計畫負責人員名錄

APPENDIX D

I. Project Staff
研究計畫人員

Position 職 位	Name/Institution 姓名及服務機關
Director 執行人	Dr. O. Donald Meaders, Professor, Department of Secondary Education, and Curriiculum, Michigan State University, East Lansing, Michigan and Visiting Professor, Department of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 梅德思博士，美國密西根州立大學中等教育學系教授，中興大學農業教育學系客座教授
Co-Director 同執行人	Hu Chi-ho, Professor and Chairman, Department of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 胡啓和，中興大學農業教育學系教授兼系主任
Project Consultant 計畫諮商人	Dr. R. Paul Marvin, Professor and Chairman, Department of Agricultural Education, University of Minnesota, St. Paul, Minnesota, and Visiting Professor, Department of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 馬爾文博士，美國明尼蘇達大學農業教育學系教授兼系主任，中興大學農業教育學系客座教授
Supervisors of Research Activities 研究工作輔導人	Yao Jih-chang, Professor, Departmet of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 饒日章，中興大學農業教育學系教授
	Lin Chin-k'un, Professor, Department of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 林金坤，中興大學農業教育學系教授
	Shiue Keh-snyuan, Associate Professor, Department of Agricultural Education, National Chung Hsing University, Taichung, Taiwan, ROC. 薛克旋，中興大學農業教育學系副教授
Research Assistant and Translator 研究助理及譯員	Lin Wen-chuean, Graduate (1974), Department of Sociology, Tunghai University, Taichung, Taiwan, ROC. 林文娟，東海大學社會學系畢業生
Typist/Accountant 打字兼會計員	Lin Chiung-san, Graduate (1975), Business Department, Providence College, Taichung, Taiwan, ROC. 林瓊山，靜宜女子文理學院企業管理學系畢業生
Research Clerks 事務員	Hwang Jong-cheng 黃蓉貞 Yu Kwai-che 余桂枝 Shao Hsiu-mei 蕭秀美

APPENDIX D

II. Names of Cooperating Schools and Junior Colleges (Institutes of Agriculture), Principals/Presidents, and Persons in Charge of the Research Activity

研究計畫內之學校、校長及計畫負責人員

School Name 學 校 名 稱	Principal or President 校 長	Person in Charge of Research Act. 計畫負責人員
Chiayi Agricultural Institute 嘉義農專	Yu Chuan-tao 余傳韜	Hung Yun-li 洪沄利
Pingtung Agricultural Institute 屏東農專	Kuo Meng-shuang 郭孟祥	Liu Chih-chiang 劉志江
Ilan V-A & I School 宜蘭農工職校	Tai Huah 戴 華	Wang Lin-chang 王麟章
Taoyuan V-A&I School 桃園農工職校	Wang Nien-leh 王念烈	Chao Cheng-quei 趙正貴
Miaoli V-A&I School 苗栗農工職校	Chen Keh-iying 陳克英	Hu Chen-hua 胡正華
Hualien V-A School 花蓮農校	Tsay Ho-nein 蔡鶴年	Shen Tso 沈 佐
Taichung V-A School 臺中農校	Liu Ching-lian 劉慶廉	Chao Chen-ping 趙振平
Yuanlin V-A&I School 員林農工職校	Liao Kuo-Jih 廖國驥	Lo Chien-jung 羅健榮
Tainan V-A School 臺南農校	Chen Tian-Jih 成天驥	Lin Ju-hsin 林如信
Taitung V-A&I School 台東農工職校	Kuan Shou-pin 管叔彬	Tu Kuo-sheng 涂國生
Chungli Jun. Middle School 中壢國中	Tsay Ching-chou 蔡景洲	Lian Te-ching 連德欽
Lungtan V-A&I School 龍潭農工職校	Leu Lee-fu 呂理福	Tsay Jung-sheng 蔡榮生
Kuansi V-A School 關西農校	Ho A-tsay 何阿財	Shen Kuo-chang 沈國璋
Tahu V-A&I School 大湖農工職校	Li Huey 李 蕙	Hwang Jung-hwei 黃榮輝
Tachia V-A&I School 大甲農工職校	Sha Cheng-an 沙鋮安	Chen Shiao-chin 陳孝進
Wufeng V-A&I School 霧峰農工職校	Liu Ching-lian 劉慶廉	Chen Shih-ju 陳石如
Hsingsheh Com. Jun. Mid. School 新社綜合國中	Yang Shun-tsay 楊順財	Hwang Chun-wen 黃俊文
Puli V-A&I School 埔里農工職校	Liang Hsiang-yuh 梁祥裕	Tien Pai-yu 田培猷
Hsiuhsui V-A&I School 秀水農工職校	Lin Chih-fan 林植藩	Shiao Shiang-shyan 蕭相賢
Erhlin V-A&I School 二林農工職校	Lin Chao-chia 林肇家	Yang Jen-chu 楊仁初
Yungching V-A&I School 永靖農工職校	Lin Keh-li 林克禮	Hsu Ching-ho 徐清河
Huwei V-A&I School 虎尾農工職校	Wang Keh-wen 王克文	Wu Nan-yi 吳南逸
Tzutung Jun. Middle School 莿桐國中	Shen Yuh-shuh 沈裕庶	Liu Chin-fu 劉進福
Hsilo Com. Sen. Mid. School 西螺高中	Chuang Liang-chen 莊良珍	Hwang Tsung-kou 黃宗溝
Peikong V-A&I School 北港農工職校	Hsu Chun 徐 均	Tsai Ti-nan 蔡廸男
Tungshih Com. Senior Mid. School 東石高中	Chang Shih-san 張石山	Han Shih-chang 韓世長
Minghsiung Com. Sen. Mid. School 民雄高中	Chou Chao-ching 周召欽	Ho Shang-yu 何尚友
Tsenwen Com. Senior Mid. School 曾文高中	Hwang Wei-yeh 黃爲業	Sun Tian-cheng 孫天成
Hsinghwa V-A&I School 新化農工職校	Chi Keng-cheng 紀庚錚	Pan Tsung-chi 潘宗治
Peimen V-A&I School 北門農工職校	Liu Chih 劉 智	Liu Yan-ping 劉晏平
Hsingfeng Com. Sen. Mid. School 新豐高中	Hsu Yi-ming 許溢明	Wang Pi-ju 王碧如
Chisan V-A&I School 旗山農工職校	Yeh Shao-yuan 葉紹原	Liu Ming-tze 劉明澤
Kangsan V-A&I School 岡山農工職校	Sung Kuo-yuan 宋國元	Hus chung-chiang 許仲江
Chiatung V-A School 佳冬農校	Jen I-huah 任藝華	Chung Ming-hsiung 鍾明雄
Jenai V-A School 仁愛農校	Li Shao-pai 李少白	Yin Tsung-yuan 殷宗元
Neipu V-A&I School 內埔農工職校	Yen Tai-k'uei 嚴太煃	Li Chi-yuan 李啓源